Author Index to Volume 17

References with (L) are to Letters to the Editor

Adamson, Arthur W. and Jack J. Grossman. Kinetic mechanism for ion-exchange—1002(L)

——, **James W. Cobble, and Julian M. Nielsen.** Differential diffusion coefficients of sodium ion in sodium chloride solutions—740(L)

Altman, David and S. S. Penner. Chemical reaction during adiabatic flow through a rocket nozzle—56

Amdur, I. Calculation of transport properties of gases—100(L)

—— Repulsive interaction potentials at small interaction distances: He—He and H—H_2 systems—844(L)

Andersen, J. W. and R. S. Fein. Measurements of normal burning velocities and flame temperatures of Bunsen flames—1268

Anslow, Gladys A., Hsi-Teh Hsieh, and Ruth C. Shea. Ultraviolet absorption by hydrogen-bridged molecules—426(L)

Anspach, Claude (see Duchesne, Jules)—110(L)

Augenstein, Bruno W. Unsteady shock wave—429(L)

Axford, D. W. E. and D. H. Rank. Infra-red absorption spectrum of *n*-butane in the solid state—430(L)

—— (see Rank, D. H.)—1339, 1354(L)

Axilrod, B. M. Triple-dipole interaction between atoms and cohesion in crystals of the rare gases—1349(L)

Badger, Richard M. (see Wilson, M. Kent)—1232

Badin, Elmer J., Joseph G. Stuart, and Robert N. Pease. Burning velocities of butadiene-1,3 with nitrogen-oxygen and helium-oxygen mixtures—314

Bamford, C. H. and M. J. S. Dewar. General kinetics of copolymerization and an extension of the viscosity method to determine velocity constants—1188

Barker, E. F. (see Posey, L. R., Jr.)—182

Batke, T. L., L. M. Dorfman, and D. J. LeRoy. Photochlorination of methyl chloroformate in carbon tetrachloride solution—566

Bauer, Norman and J. Y. Beach. Comparison of the ionization cross sections of H_2 and D_2—100(L)

Bayliss, Noel S. Potential energy in conjugated polyenes and the effective nuclear charge of the carbon atom—1353(L)

Beach, J. Y. (see Bauer, Norman)—100(L)

Beamer, William H. and William E. Easton. Physical properties of polonium. III. Half-life of polonium—1298

—— **and Charles R. Maxwell.** Physical properties of polonium II. X-ray studies and crystal structure—1293

Beattie, James A., David G. Edwards, and Stanley Marple, Jr. Vapor pressure, orthobaric liquid density, and critical constants of isobutane—576

Beeck, O., J. W. Otvos, D. P. Stevenson, and C. D. Wagner. Hydrogen exchange reactions of the butanes in sulfuric acid—418

—— (see Wagner, C. D.)—419

Benson, Sidney W. and Edward Gerjuoy. Tensile strengths of liquids. I. Thermodynamic considerations—914

Bernstein, H. J. Internal rotation. I. Product rule for *cis*- and *trans*-isomers—256

—— Internal rotation II. Energy difference between the rotational isomers of 1,2-dichloroethane—258

—— Internal rotation III. Potential barrier in 1,2-dichloroethane—262

—— **and E. Egelund Pedersen.** Internal rotation IV. Optical activity and isomerization energy of the rotational isomers of D-secondary butyl alcohol—885

—— **and D. A. Ramsay.** Vibration spectra of *cis*- and *trans*-$C_2H_2Cl_2$ and $C_2D_2Cl_2$—556

Bernstein, R. B. Note on transient pressure effect in effusion—209(L)

Berry, Clifford E. Temperature coefficients for the mass spectra of a number of hydrocarbons—1164(L)

—— Effect of an electric field on the thermal conductivity of glass—1355(L)

Berryman, L. H. (see Nielsen, J. Rud)—659

Bigeleisen, Jacob. Isotope effect in the rupture of carbon-carbon bonds in propane-1-C^{13}—344(L)

—— Isotope effect in the decarboxylation of labelled malonic acids—425(L)

—— Relative reaction velocities of isotopic molecules—675

—— **and Lewis Friedman.** C^{13} isotope effect in the decarboxylation of malonic acid—998(L)

Binder, John L. Thermodynamic functions of CH_3SH and $(CH_3)_2S$—499 (L)

Biradar, N. S. (see Prasad, Mata)—813

Bird, R. B. (see Hirschfelder, J. O.)—1343(L)

Blacet, Francis E. (see Brinton, Robert K.)—797

Bomberger, Donald R. (see Maxwell, Roy D.)—1005(L)

Bovey, L. F. H. and G. B. B. M. Sutherland. Infra-red evidence for free rotation in the solid state—843(L)

Boyd, A. W. (see Cunningham, G. L.)—211(L)

Boyd, Charles A. Kinetic study of the thermoluminescence of lithium fluoride—1221

Bradshaw, B. C. Study of metallic electrodes prepared by sublimation—344(L)

Bragg, J. K. (see Golden, S.)—439

Brentano, J. C. M. and L. V. C. Spencer. Changes in the crystal structure of AgBr when exposed to x-rays—944

Brinkman, H. C. and J. J. Hermans. Effect of non-homogeneity of molecular weight on the scattering of light by high polymer solutions—574

Brinton, Robert K. and Francis E. Blacet. Mass spectrometric study of a mixture of deuterated acetaldehydes—797

Broersma, S. Magnetic susceptibility of organic compounds—873

Brown, Leon J. and Seymour Katcoff. Characteristics of 16.5-minute Y—497(L)

—— (see Katcoff, Seymour)—505(L)

Browning, George V. and John D. Ferry. Thermodynamic studies of polyvinyl acetate solutions in the dilute and moderately concentrated range—1107

Brunner, E. Thermodynamic properties of activated complexes—346(L)

—— Correlation between viscosity and energy of vaporization—346(L)

Buchdahl, Rolf (see Nielsen, Lawrence E.)—839(L)

Budó, A. Dielectric relaxation of molecules containing rotating polar groups—686

Buff, Frank P. (see Kirkwood, John G.)—988

—— (see Kirkwood, John G.)—338

Bugosh, John (see Yeager, Ernest)—411

Burke, Edward (see Friedman, Raymond—667(L)

Byrd, Willis E. (see Edgell, Walter F.)—740(L)

Calvin, M. (see Lewis, G. N.)—804

—— (see Weigl, John W.)—210(L)

—— (see Yankwich, Peter E.)—109(L)

Cap, F. New equation for the non-stationary shock wave—106(L)

Capron, Paul P., Edgard Crèvecoeur, and Maurice Faes. Difference in the recoil energy of the Br^{80} isomers following neutron capture—349(L)

Carroll, Benjamin and Arthur W. Thomas. Spectral changes of dyes in colloidal solutions of hydrous oxides—1336(L)
Casey, E. J. (see Laidler, K. J.)—213(L)
—— (see Laidler, K. J.)—1087
Cassel, Hans M. Condensation coefficient and adsorption—1000(L)
Castellan, Gilbert W. and Walter J. Moore. Diffusion of radioactive copper during oxidation of copper foil—41
Clar, E. Spectral resemblances of cata-condensed hydrocarbons—741(L)
Cleveland, Forrest F. (see Meister, Arnold G.)—212(L)
—— (see Ziomek, Joseph S.)—578, 669(L)
Cobble, James W. (see Adamson, Arthur W.)—740(L)
Coffin, C. C. and I. I. Tingley. Exchange of Ag^+ ions between aqueous solutions and surfaces of metallic silver—502(L)
Coggeshall, Norman D. and Nathan F. Kerr. Mass spectrometer studies of thermal decomposition products from hydrocarbons—1016
Cole, R. H. (see Strobel, H. A.)—1141
Coleman, F. F. (see Mitchell, J. J.)—44
Condon, F. E. (McMurry, H. L.)—918
Cottington, R. L. (see Hardy, R. C.)—509(L)
Cowan, R. D. Infra-red spectra of borine carbonyl and tetramethyldiborane—218(L)
Craig, D. P. Energy levels of aromatic hydrocarbons—1358(L)
Crandall, Howard W. Formula of uranyl ion—602
Crawford, Bryce L., Jr. and Foil A. Miller. Planar vibrations of benzene—249
—— **and Robert G. Parr.** Molecular orbital calculations of vibrational force constants. II. The ring-twisting constants of benzene—726
—— (see Sun, C. E.)—840(L)
Crèvecoeur, Edgard (see Capron, Paul P.)—349(L)
Cross, Paul C. (see Hainer, R. M.)—826
Cunningham, G. L., A. W. Boyd, William D. Gwinn, and W. I. LeVan. Structure of ethylene oxide—211(L)
Curtiss, Charles F. and Joseph O. Hirschfelder. Transport properties of multicomponent gas mixtures—550
—— (see Hirschfelder, J. O.)—1076

Dames, C. A. (see Shuler, K. E.)—860
Dailey, B. P. (see Townes, C. H.)—782
Davidson, Norman and John H. Sullivan. Kinetics of the vapor phase exchange of radioactive bromine between trichlorobromomethane and bromine—176
Davies, Mansel. Simple potential functions and the hydrogen halide molecules—374
Dean, Helen M. (see Mohler, Fred L.)—1358(L)
Dean, Laurence B., Jr. (see Lassettre, Edwin N.)—317
deButts, Edward H., Jr. (see Wall, Frederick T.)—1330
Debye, P. and R. V. Nauman. Scattering of light by sodium silicate solutions—664(L)
Decius, J. C. Symmetry species of overtones of degenerate vibrational fundamentals—504(L)
—— Complete sets and redundancies among small vibrational coordinates—1313
Deitz, V. R. (see Loebenstein, W. V.)—1004(L)
Dewar, M. J. S. (see Bambord, C. H.)—1188
Dewhurst, H. A. (see Krenz, F. H.)—1337
Dharmatti, S. S. (see Prasad, Mata)—813, 819
Dillon, Robert (see Scott, Arthur F.)—1179
Dodgen, Harold W. and W. F. Libby. Exchange reaction between the hydrogen halides and the halogens in the gaseous state—951
Dorfman, Leon M. and Zachary D. Sheldon. Mechanism of the photo-chemical decomposition of diethyl ketone—511
—— (see Batke, T. L.)—566
Doty, Paul and Robert F. Steiner. Light scattering from solutions of charged macromolecules—743(L)
Douglas, David L. and Don M. Yost. Photo-chemical reduction of water by europium **(II)** ion, and the magnetic susceptibilities of europium (II) and (III) ions—1345(L)
Downey, S. L. (see Drickamer, H. G.)—408
Drenan, J. W. and Terrell L. Hill. Statistical mechanics of adsorption. VIII. Statistical analogue of the B.E.T. constant a_1b_2/b_1a_2 for simulated benzene and hydrogen iodide molecules on graphite—775
Drickamer, H. G. and J. R. Hofto. Effect of pressure on the thermal diffusion ratio—1165(L)
——, **S. L. Downey, and N. C. Pierce.** Thermal diffusion in hydrogen-hydrocarbon mixtures—408
—— (see Trevoy, D. J.)—582, 1117, 1120
Duchesne, Jules and André Monfils. Further interpretation of interaction terms in the potential function of polyatomic molecules—586(L)
—— **and Ivan Ottelet.** Vibration potential function and structure of NH_3 and AsH_3 molecules—1354(L)
——, **A. Monfilo, and Claude Anspach.** Errata: "Raman spectrum of tetraethyl orthosilicate" and "Raman spectrum of trimethyl silicon chloride"—110 (L)
Duffey, George H. Bipyramidal pentacovalent bond orbitals—196
—— Methylene radical—840(L)
—— Hexacovalent bond orbitals I—1328
Duffie, J. A. H. (see Schneider, W. G.)—751
Duncan, A. B. F. (see Liu, Ta-Kong)—241
Dunell, Basil A. and Arthur V. Tobolsky. Dynamic properties of polymeric materials—1001(L)
du Pré, F. K. (see Rittner, E. S.)—198
—— (see Hutner, R. A.)—204

Easton, William E. (see Beamer, William H.)—1298
Edgell, Walter F. and Willis E. Byrd. Vibrational frequencies of $CF_2=CH_2$—740(L)
—— (see Roberts, A.)—742(L)
Edwards, David G. (see Beattie, James A.)—576
Elmer, R. A. (see Katcoff, S.)—421
Essex, Harry (see Williams, Nelson T.)—995

Faes, Maurice (see Capron, Paul P.)—349(L)
Fein, R. S. (see Andersen, J. W.)—1268
Ferry, John D. (see Browning, George V.)—1107
Fisher, J. C. Errata: Rate of nucleation in condensed systems—429(L)
—— (see Turnbull, D.)—71
Flory, Paul J. Thermodynamics of crystallization in high polymers. IV. A theory of crystalline states and fusion in polymers, copolymers, and their mixtures with diluents—223
—— Configuration of real polymer chains—303
—— Statistical mechanics of dilute polymer solutions—1347 (L)
—— (see Fox, Thomas G., Jr.)—704
Fonó, Catherine (see Gerö, L.)—345 (L)
Fox, Thomas G., Jr., Paul J. Flory, and Robert E. Marshall. Thermodynamics of crystallization in high polymers. VI. Incipient crystallization in stretched vulcanized rubber—704
Francel, Rudolph J. (see Halverson, Frederick)—694
Freed, Simon and C. J. Hochanadel. Solutions of salts fluid at the temperature of liquid nitrogen spectra of solutions of rare earths—664(L)
—— **and Fred J. Leitz, Jr.** Absorption spectra of transuranic salts in crystals—540
Friedel, R. A. and A. G. Sharkey, Jr. Mass spectrum of hydrogen deuteride (HD)—584(L)
—— (see Sharkey, A. G., Jr.)—998(L)

—— (see Weller, Sol)—801
Friedman, Lewis and W. F. Libby. Hot atom chemistry of the propyl bromides—647
—— **and J. Turkevich.** Infra-red absorption spectra of propane-D-I and propane-D-II—1012
—— (see Bigeleisen, Jacob)—998(L)
Friedman, Raymond and Edward Burke. Spark ignition of gas mixtures—667(L)

Garlick, G. F. J., A. F. Wells, and M. H. F. Wilkins. Zinc sulfide phosphor constitution and its effect on electron traps—399
Garner, Clifford S. (see Meier, Dale J.)—1344(L)
Garrison, Warren M., Herman R. Haymond, and Roy D. Maxwell. Rapid electrical method of separating carrier-free radioactivities—665(L)
—— (see Maxwell, Roy D.)—1005(L), 1006(L), 1340(L)
Gates, David M. Experimental and theoretical investigation of the skeletal frequencies of the paraffin hydrocarbons and the far infra-red spectrum of carbon tetrachloride—393
Gavoret, G. and Michel Magat. Contribution to the thermodynamics of high polymer solutions. V. Solubility of heterogeneous polymers—999(L)
Gerjuoy, Edward (see Benson, Sidney W.)—914
Gerö, L. and Catherine Fonó. Dissociation schemes of N_2, P_2, As_2, Sb_2, and Bi_2—345(L)
Gerson, N. C. Note on temperature and the recombination coefficient—1351(L)
Ghose, A. K. (see Prasad, Mata)—819
Ghosh, B. N. (see Szwarc, M.)—744(L)
Gierer, A. and K. Wirtz. Anomalous mobility of H^+ and OH^- ions—745(L)
Gile, Jeanne D. (see Maxwell, Roy D.)—1340(L)
Glockler, George. Bond energies and bond distances of the normal paraffins—747(L)
—— Bond energies and bond distances of branched paraffins —748(L)
—— Dissociation energies of carbon-hydrogen bonds in paraffins from bond-energies—749(L)
Golden, Sidney. Quantum mechanics of chemical kinetics of homogeneous gas phase reactions. I. General considerations—620
—— Erratum: asymptotic expression for the energy levels of the asymmetric rotor. II. Centrifugal distortion correction—586(L)
—— **and J. K. Bragg.** Asymptotic expression for the energy levels of the asymmetric rotor. III. Approximation for the essentially degenerate levels of the rigid rotor—439
—— **and A. M. Peiser.** Quantum mechanics of chemical kinetics of homogeneous gas phase reactions. II. Approximations for displacement reactions between an atom and a diatomic molecule—630; Erratum—842 (L)
Goldsmith, S. S. (see Katcoff, S.)—421
Goldstein, J. H. (see Westenberg, A. A.)—1319
Green, Melvin S. (see Kirkwood, John G.)—988
Grenall, Alexander. Isothermal compositional order-disorder. I. Superstructure solid solutions in a salt system—1036
Grimley, T. B. Note on low frequency dispersion in ionic crystals—496(L)
Gross, B. Permanent charges in solid dielectrics. II. Surface charges and transient currents in carnauba wax—866
Grossman, Jack J. (see Adamson, Arthur W.)—1002(L)
Gunning, H. E. and E. W. R. Steacie. Mercury photosensitized polymerization of cyclopropane—351
Guthrie, George, Jr., J. Norton Wilson, and Verner Schomaker. Theory of the thermal diffusion of electrolytes in a Clusius column—310
Gutowsky, H. S. Infra-red and Raman spectra of dimethyl mercury and dimethyl zinc—128
——, **G. B. Kistiakowsky, G. E. Pake, and E. M. Purcell.** Structural investigations by means of nuclear magnetism. I. Rigid crystal lattices—972
Gwinn, William D. (see Cunningham, G. L.)—211(L)

Hainer, R. M., Paul C. Cross, and Gilbert W. King. Asymmetric rotor. VII. Extension of the calculation of energy levels—826
Halford, J. O. Hindered rotation in ethyl alcohol—111
—— Contribution of the deviation from perfect gas behavior to the entropy and heat capacity. Water and benzene—405
Halford, Ralph S. (see Keller, William E.)—26
—— (see Winston, Harvey)—607
Hall, L. D. (see Katcoff, S.)—421
Halsey, G. D., Jr. Catalysis on non-uniform surfaces—758
Halverson, Frederick and Rudolph J. Francel. Vibrational spectrum and infra-red polarization measurements for malononitrile—694
—— **and Robert C. Hirt.** Near ultraviolet absorption spectra of the diazines—1165(L)
—— (see Stamm, Robert F.)—104(L)
Hamill, William H. and J. A. Young. Efficiency of the internal conversion process in Br^{80}—215(L)
Hamilton, Joseph G. (see Maxwell, Roy D.)—1005(L), 1006(L), 1340(L)
Hanwick, T. J. and P. Hoffmann. Raman spectra of certain phosphoric acids and their salts—1166(L)
Hardy, R. C. and R. L. Cottington. Viscosity of deuterium oxide and water from 5° to 125°C—509(L)
Haymond, Herman R. (see Garrison, Warren M.)—665(L)
—— (see Maxwell, Roy D.)—1005(L), 1006(L), 1340(L)
Herman, Robert C. and George A. Hornbeck. Hydrocarbon flame spectra—1344(L)
—— **and Wave H. Shaffer.** Vibration-rotation mechanics of the allene molecule. Part I. Classical vibration problem—30
——, **H. S. Hopfield, G. A. Hornbeck, and S. Silverman.** Photographic infra-red emission bands of O_2 from the CO—O_2 flame—220(L)
—— (see Hornbeck, George A.)—842(L)
Hermans, J. J. (see Brinkman, H. C.)—574
Herzberg, G. and K. Narahari Rao. Rotation-vibration spectra of diatomic and simple polyatomic molecules with long absorbing paths. II. The spectrum of carbon monoxide below 1.2μ—1099
Hildebrand, J. H. Solubility of water in hydrocarbons—1346(L)
Hill, Terrell L. Physical adsorption on non-uniform surfaces —106(L)
—— Note on steric factors for some reactions involving free radicals—503(L)
—— Thermodynamic transition from adsorption to solution —507(L)
—— Statistical mechanics of adsorption. V. Thermodynamics and heat of adsorption—520
—— Physical adsorption and the free volume model for liquids—590(L)
—— Extension of Fowler's treatment of surface tension to physical adsorption—668(L)
—— Statistical mechanics of adsorption. VI. Localized unimolecular adsorption on a heterogeneous surface—762
—— Statistical mechanics of adsorption. VII. Thermodynamic functions for the B.E.T. theory—772
—— Diffusion in photo-chemical experiments: the photochemical decomposition of acetone—1125
—— (see Drenan, J. W.)—775
Hirschfelder, J. O. and C. F. Curtiss. Theory of flame propagation—1076
——, **R. B. Bird, and E. L. Spotz.** Note on the transport properties for non-polar gases—1343(L)

—— (see Curtiss, Charles F.)—550
—— (see Hulburt, Hugh M.)—964
Hirt, Robert C. (see Halverson, Frederick)—1165(L)
Hochanadel, C. J. (see Freed, Simon)—664(L)
Hoffman, Robert E. and D. F. Hornig. Infra-red spectrum of solid hydrogen cyanide—1163(L)
Hoffmann, P. (see Hanwick, T. J.)—1166(L)
Hofto, J. R. (see Drickamer, H. G.)—1165(L)
Hoge, Harold J. and Martin T. Wechsler. Determination of the density of UF_6 from the sinking temperatures of glass floats—617
Holden, Robert B., William J. Taylor, and Herrick L. Johnston. Infra-red spectra of liquid and solid methane—1356(L)
Hollingsworth, C. A. Transverse boundary of the random coil—97
Holt, R. B. and O. Oldenberg. Role of hydrogen peroxide in the thermal combination of hydrogen and oxygen—1091
Hopfield, H. S. (see Herman, R. C.)—220(L)
—— (see Hornbeck, George A.)—982
Hornbeck, George A. and Robert C. Herman. Deslandres-D'Azambuja band system of the C_2 molecule in the ethylene-oxygen flame—842(L)
—— **and Hopfield, Helen S.** Spectroscopic investigation of the carbon monoxide-oxygen reaction—982
Hornbeck, G. A. (see Herman, R. C.)—220(L), 1344(L)
Hornig, D. F. Spectra of disordered crystals—1346(L)
—— (see Hoffman, Robert E.)—1163(L)
—— (see Mair, Robert D.)—1236
—— (see Wagner, E. L.)—105(L)
Hovorka, Frank (see Yeager, Ernest)—411, 416
Hsieh, Hsi-Teh (see Anslow, Gladys A.)—426(L)
Huang, Tzu-Ching. Note on the coefficient of the term $\Pi\beta_k{}^{nk}$ in the cluster integral b_l in Mayer's condensation theory—348(L)
Hulburt, Hugh M. and Joseph O. Hirschfelder. Non-equilibrium theory of absolute reaction rates—964
Hutchinson, Franklin. Self-diffusion in argon—1081
Hutner, R. A., E. S. Rittner, and F. K. du Pré. Concerning the work of polarization in ionic crystals of the NaCl type. II. Polarization around two adjacent charges in the rigid lattice—204
—— (see Rittner, E. S.)—198

Iwasaki, Machio (see Morino, Yonezo)—216(L)
—— (see Yamasaki, Kazuo)—1355(L)

Janz, G. J. and K. E. Russell. Entropy and configuration of methylhydrazine—1352(L)
Johnson, G. L., R. F. Leininger, and E. Segrè. Chemical properties of asatine. I.—1
Johnson, Peter D. and Ferd E. Williams. Crystals of luminescent ZnF_2: Mn—583(L)
—— **and Ferd E. Williams.** Some magnetic properties of manganese-activated luminescent solids—435
Johnston, Harold S. and Don M. Yost. Kinetics of the rapid gas reaction between ozone and nitrogen dioxide—386
Johnston, Herrick L. (see Holden, Robert B.)—1356(L)
Jones, E. A., T. F. Parkinson, and R. B. Murray. Infra-red and Raman spectra of chlorine trifluoride—501(L)
—— (see Woltz, Patricia J. H.)—502(L)
Jones, W. M. Thermodynamic functions for tritium deuteride. The dissociation of tritium deuteride. Equilibria among the isotopic hydrogen molecules—1062
Jura, George. Thermodynamic properties of the surface of magnesium oxide—1335(L)

Kagarise, R. E. (see Rank, D. H.)—1354(L)
Kamen, M. D. (see Tsai, L. S.)—585(L)
Kanekar, C. R. (see Prasad, Mata)—813
Karim, S. (see Parshad, R.)—667(L)
Karle, Isabella Lugoski and Jerome Karle. Internal motion and molecular structure studies by electron diffraction—1052
Karle, J. Evaporation of polar hydrocarbon monolayers—500(L)
—— (see Karle, Isabella Lugoski)—1052
Kasha, M. Vibrational fine structure in the absorption spectra of uranyl and plutonyl ions in aqueous solution—349(L)
—— **and R. V. Nauman.** Metastability of the lowest excited singlet level of naphthalene—516
—— (see Lewis, G. N.)—804
Katcoff, Seymour and Leon J. Brown. Search for short-lived Y, ZR, and CB fission products—505(L)
——, **J. A. Leary, K. A. Walsh, R. A. Elmer, S. S. Goldsmith, L. D. Hall, E. G. Newbury, J. J. Povelites, and J. S. Waddell.** Neutron absorption cross sections of radioactive La^{140} and two stable cerium isotopes—421
—— (see Brown, Leon J.)—497(L)
—— (see Stanley, Charles W.)—653
Katz, E. On the photographic reciprocity law failure and related effects. I. The low intensity failure—1132
Kavanau, J. L. Comparison of relations between covalent bond order, energy, and interatomic distance for carbon-carbon bonds—738
Keller, William E. and Ralph S. Halford. Motions of molecules in condensed systems. IV. Infra-red spectra for ammonium nitrate and thallous nitrate—26
Kerr, Nathan F. (see Coggeshall, Norman D.)—1016
Ketelaar, J. A. A. (see van Dranen, J.)—1338(L)
Keyes, Frederick G. Consistency of the thermodynamic data for water substance vapor phase to 550°C. Part VII—923
Kilpatrick, John E. and Kenneth S. Pitzer. Energy levels and thermodynamic functions for molecules with internal rotation. III. Compound rotation—1064
Kimball, George E. (see Oakley, Margaret B.)—706
King, Gilbert W. (see Hainer, R. M.)—826
Kirkwood, John G. and Frank P. Buff. Statistical mechanical theory of surface tension—338
——, **Frank P. Buff, and Melvin S. Green.** Statistical mechanical theory of transport processes. III. Coefficients of shear and bulk viscosity of liquids—988
—— (see Riseman, Jacob)—442
Kistiakowsky, G. B. (see Gutowsky, H. S.)—972
Kleppa, O. J. Ultrasonic velocities of sound in some liquid metals—668(L)
Klevens, H. B. Solubilization in swollen micelles—1004(L)
—— **and J. R. Platt.** Spectral resemblances of cata-condensed hydrocarbons—470, 742(L)
—— (see Mann, D. E.)—481
—— (see Platt, J. R.)—466
Kohn, Walter. Variational iteration method for solving secular equations—670(L)
Kónya, A. On Grüneisen's constant for metals—837(L)
Koski, W. S. Diffusion of oxygen in potassium chloride—582(L)
Kotera, Akira (see Yamasaki, Kazuo)—1355(L)
Krenz, F. H. and H. A. Dewhurst. Mechanism of oxidation of ferrous sulfate—1337(L)
Krigbaum, William R. (see Wall, Frederick T.)—1274
Krishna, Bal. Reaction mechanism in ionic systems—846(L)
Kuhn, Hans. Quantum mechanical theory of light absorption of organic dyes and similar compounds—1198
Kuratani, K. (see Mizushima, S.)—838(L)

Lagemann, R. T., D. R. McMillan, Jr., and W. E. Woolf. Temperature variation of ultrasonic velocity in liquids—369

Laidler, K. J. Formation of electronically excited oxygen in the carbon monoxide flame—221(L)
—— **and E. J. Casey.** Electronic state of the methylene radical—213(L)
—— **and E. J. Casey.** Heats of dissociation of carbon-hydrogen bonds in methane and its radicals—1087
—— **and K. E. Shuler.** Kinetics of membrane processes. I. Mechanism and the kinetic laws for diffusion through membranes—851
—— **and K. E. Shuler.** Kinetics of membrane processes. II. Theoretical pressure-time relationships for permeable membranes—856
—— (see Shuler, K. E.)—860, 1356(L)
LaMer, V. K. and G. M. Pound. Surface tension of small droplets from Volmer and Flood's nucleation data—1337(L)
Lander, J. J. Polymorphism and anion rotational disorder in the alkaline earth carbonates—892
Lassettre, Edwin N. and Laurence B. Dean, Jr. Electrostatic theory of the potential barriers hindering rotation around single bonds—317
László, Z. Osmosis in electrical fields of various frequencies—507(L)
Leary, J. A. (see Katcoff, S.)—421
Lee, G. L. and D. J. LeRoy. Sodium (^2P) photosensitized decomposition of ethane—1349(L)
Leffler, J. E. Decomposition of benzoyl peroxide in a magnetic field—741(L)
—— **and M. J. Sienko.** Styrene polymerization in a magnetic field—215(L)
Leger, Edouard (see Ouellet, Ludovic)—746(L)
Leininger, R. F. (see Johnson, G. L.)—1
Leitz, Fred J., Jr. (see Freed, Simon)—540
LeRoy, D. J. (see Batke, T. L.)—566
—— (see Lee, G. L.)—1349(L)
LeVan, W. I. (see Cunningham, G. L.)—211(L)
Lewis, G. N., M. Calvin, and M. Kasha. Photomagnetism. Determination of the paramagnetic susceptibility of a dye in its phosphorescent state—804
Li, Yin-Yuan. Quasi-chemical theory of order for the copper gold alloy system—447
—— On the quasi-chemical theory of order—1335(L)
Liang, Shou-Chu. Catalyst surface structure—1348(L)
Libby, W. F. (see Dodgen, Harold W.)—951
—— (see Friedman, Lewis)—647
Lindsay, J. G., D. E. McElcheran, and H. G. Thode. Isotope effect in the decomposition of oxalic acid—589(L)
Lippincott, Ellis R. Vibrational spectra and structure of the aluminum hydride ion—1351(L)
Liu, Ta-Kong and A. B. F. Duncan. Absorption spectrum of ethylene oxide in the vacuum ultraviolet—241
Loebenstein, W. V. and V. R. Deitz. Simplified technique for surface area determination by adsorption of nitrogen—1004(L)
Longuet-Higgins, H. C. (see Price, W. C.)—217(L)

Maccoll, Allan. Kinetics of the pyrolysis of allyl bromide—1350(L)
Maddams, William Francis and Robert Schnurmann. Ultraviolet absorption spectra of phenanthrene in various solvents—108(L)
Magat, Michel (see Gavoret, G.)—999(L)
Mair, Robert D. and Donald F. Hornig. Vibrational spectra of molecules and complex ions in crystals. II. Benzene—1236
Mann, D. E., J. R. Platt, and H. B. Klevens. Spectral resemblances in azulene and naphthalene—481
—— (see Wheland, G. W.)—264
Manson, N. Theory of burning velocities in gas mixtures—837(L)
Markstein, G. H. Cell structure of propane flames burning in tubes—428(L)
Marple, Stanley, Jr. (see Beattie, James A.)—576
Marshall, Robert E. (see Fox, Thomas G., Jr.)—704
Masi, Joseph F. Heats of vaporization of uranium hexafluoride—755
Mathews, M. B. (see Mattoon, R. W.)—496(L)
Matossi, Frank. Vibration frequencies and binding forces in some silicate groups—679
Matsen, F. A. (see Walsh, Mac)—1343(L)
Mattoon, R. W. and M. B. Mathews. Micelles in nonaqueous media—496(L)
Maxwell, Charles R. Physical properties of polonium I. Melting point, electrical resistance, density and allotropy—1288
—— (see Beamer, William H.)—1293
Maxwell, Roy D., Jeanne D. Gile, Warren M. Garrison, and Joseph G. Hamilton. Carrier-free radioisotopes from cyclotron targets. IV. Preparation and isolation of Mn^{54} and $Co^{56, 57, 58}$—1340(L)
——, **Herman R. Haymond, Warren M. Garrison, and Joseph G. Hamilton.** Carrier-free radioisotopes from cyclotron targets. III. Preparation and isolation of $Sb^{122, 124}$ from tin—1340(L)
——, **Herman R. Haymond, Warren M. Garrison, and Joseph G. Hamilton.** Carrier-free radioisotopes from cyclotron targets. II. Preparation and isolation of Cd^{109} from silver—1006(L)
——, **Herman R. Haymond, Donald R. Bomberger, Warren M. Garrison, and Joseph G. Hamilton.** Carrier-free radioisotopes from cyclotron targets. I. Preparation and isolation of Sn^{113} and In^{114} from cadmium—1005(L)
—— (see Garrison, Warren M.)—665(L)
Mayer, Joseph E. Editorial—847
McCarthy, John (see Yeager, Ernest)—411
McClure, Donald S. Selection rules for singlet-triplet perturbations in polyatomic molecules—665(L)
—— Triplet-singlet transitions in organic molecules. Lifetime measurements of the triplet state—905
McDowell, C. A. and J. H. Thomas. Mechanism of the initiation of the oxidation of acetaldehyde in the gas phase—588(L)
McElcheran, D. E. (see Lindsay, J. G.)—589(L)
McLane, C. K. Hydrogen peroxide in the thermal hydrogen oxygen reaction. I. Thermal decomposition of hydrogen peroxide—379
McMillan, D. R., Jr. (see Lagemann, R. T.)—369
McMurry, H. L., V. Thornton, and F. E. Condon. Infrared spectra of propane, 1-deuteropropane, and 2-deuteropropane and some revisions in the vibrational assignments for propane—918
McWeeny, R. Diamagnetic anisotropy of *p*-polyphenyls—1341(L)
Meier, Dale J. and Clifford S. Garner. Chemical oxidation states of Cl and N formed by the S^{34} $(p,n)Cl^{34}$ and O^{16} $(p,\alpha)N^{13}$ reactions in crystals—1344(L)
Meister, Arnold G. and Forrest F. Cleveland. Vibrational spectrum of diiodoacetylene—212(L)
—— (see Ziomek, Joseph S.)—669(L)
Miller, A. A., and J. E. Willard. Exchange reaction between bromine and bromotrichloromethane—168
Miller, C. H. and H. W. Thompson. Ultraviolet absorption of fluorinated aromatic hydrocarbons—845(L)
Miller, Foil A. (see Crawford, Bryce L., Jr.)—249
Mitchell, J. J. and F. F. Coleman. Hydrocarbon ion appearance potentials—44
Mizushima, Masataka. New method of estimating the surface area of powder—1357(L)

Mizushima, San-ichiro, Yonezo Morino, and Takehiko Simanouti. Note on the product rule for rotational isomers —663(L)
Mizushima, S., Y. Morino, T. Simanouti, and K. Kuratani. Infra-red and Raman spectra of hexachloroethane—838(L)
——, **Yonezo Morino, Itaru Watanabe, and Takehiko Simanouti.** Energy difference between the rotational isomers of 1,2-dichloroethane—663(L)
——, **Yonezo Morino, Itaru Watanabe, Takehiko Simanouti, and Shigeto Yamaguchi.** Raman effect, infra-red absorption, dielectric constant, and electron diffraction in relation to internal rotation—591
—— (see Simanouti, Takehiko)—1102
Mohler, Fred L., Laura Williamson, Edmund J. Wells, Jr., and Helen M. Dean. Mass spectra of *cis*- and *trans*-decahydronaphthalene—1358(L)
Monfilo, A. (see Duchesne, Jules)—110(L)
Monfils, André (see Duchesne, Jules)—586(L)
Moore, George E. (see Parks, George S.)—1151
Moore, Walter J. and Leo A. Wall. Mercury photo-sensitized hydrogenation of the butenes and the photolysis of *di-n*-butylmercury—1325
—— (see Castellan, Gilbert W.)—41
Morino, Yonezo and Machio Iwasaki. Estimation of the hindering potential barrier of hexachloroethane by electron diffraction investigation—216(L)
—— (See Mizushima, San-ichiro)—591, 663(L), 838(L)
Mosley, John R. (see Parks, George S.)—691
Mulliken, R. S., C. A. Rieke, D. Orloff, and H. Orloff. Overlap integrals and chemical binding—510(L)
——, **C. A. Rieke, D. Orloff, and H. Orloff.** Formulas and numerical tables for overlap integrals—1248
Murray, R. B. (see Jones, E. A.)—501(L)

Nagamiya, T. and S. Yomosa. Phase transition and the piezoelectric effect of KH_2PO_4—102(L)
Nathans, Marcel W. Note on the selection rules for ions in crystalline surfaces—500(L)
Nauman, R. V. (see Debye, P.)—664(L)
—— (see Kasha, M.)—516
Neu, John T. (see Webb, Allen N.)—1007
Newbury, E. G. (see Katcoff, S.)—421
Newton, T. W. and G. K. Rollefson. Relative rates of photo-chlorination of $CHCl_3$ and $CDCl_3$—718
Nielsen, Julian M. (see Adamson, Arthur W.)—740(L)
Nielsen, Lawrence E. and Rolf Buchdahl. Viscoelastic and photoelastic properties of polystyrene above its softening temperature—839(L)
Nielsen, J. Rud and L. H. Berryman. General method of obtaining molecular symmetry coordinates—659

Oakley, Margaret B. and George E. Kimball. Punched card calculation of resonance energies—706
Oldenberg O. Energy of dissociation $H_2O \rightarrow H + OH$—1059
—— (see Holt, R. B.)—1091
Olson, A. R., and T. R. Simonson. Salt effects on ionic equilibria—348(L)
—— **and T. R. Simonson.** Hydrolysis of ferric ion—1317
—— **and T. R. Simonson.** Rates of ionic reactions in aqueous solutions—1167
Oriani, Richard A. and Charles P. Smyth. Dipole moment and restricted rotation in some chlorinated hydrocarbons —1174
Orloff, D. (see Mulliken, R. S.)—510(L)
—— (see Mulliken, R. S.)—1248
Orloff, H. (see Mulliken, R. S.)—510(L)
—— (see Mulliken, R. S.)—1248
Ottelet, Ivan (see Duchesne, Jules)—1354(L)
Otvos, J. W. (see Beeck, O.)—418
—— (see Wagner, C. D.)—419
Ouellet, Cyrias (see Ouellet, Ludovic)—746(L)
Ouellet, Ludovic, Edouard Leger, and Cyrias Ouellet. Photoelectric measurements on cool flames—746(L)

Pake, G. E. (see Gutowsky, H. S.)—972
Parks, George S. and George E. Moore. Vapor pressure and other thermodynamic data for *n*-hexadecane and *n*-dodecylcyclohexane near room temperature—1151
—— **and John R. Mosley.** Heats of combustion of polythene and polyisobutylene—691
Parkinson, T. F. (see Jones, E. A.)—501(L)
Parr, Robert G. (see Crawford, Bryce L., Jr.)—726
—— (see Roothaan, C. C. J.)—1001(L)
—— (see Sun, C. E.)—840(L)
Parshad, R. and S. Karim. Decrease of an electrical discharge by external radiation—667(L)
Pearsall, C. S. (see Strandberg, M. W. P.)—429(L)
Pearson, Ralph G. Calculation of ionic resonance energies —969
—— New method of calculating resonance energies—1342(L)
Pease, Robert N. (see Badin, Elmer J.)—314
Pedersen, E. Egelund (see Bernstein, H. J.)—885
Peiser, A. M. (see Golden, S.)—630
—— (see Golden, S.)—842(L)
Penner, S. S. Near-equilibrium criteria for complex chemical reactions during flow through a nozzle—841(L)
—— (see Altman, David)—56
Phibbs, M. K. and H. I. Schiff. "Vapor snakes" in cyclohexane—843(L)
Pierce, N. C. (see Drickamer, H. G.)—408
Pimentel, George C. and Kenneth S. Pitzer. Ultraviolet absorption and luminescence of decaborane—882
—— **and Raymond K. Sheline.** Fermi gas model applied to the thermal electromotive forces of tin, lead, and indium —644
Pitzer, Kenneth S. Carbon isotope effect on reaction rates —1341(L)
—— (see Kilpatrick, John E.)—1064
—— (see Pimentel, George C.)—882
—— (see Webb, Allen N.)—1007
Platt, John R. Classification of spectra of cata-condensed hydrocarbons—484
——, **H. B. Klevens, and W. C. Price.** Absorption intensities of ethylenes and acetylenes in the vacuum ultraviolet —466
—— (see Klevens, H. B.)—470, 742(L)
—— (see Mann, D. E.)—481
—— (see Rector, C. W.)—460
Plyler, Earle K. Infra-red absorption spectra of organic compounds—218(L)
Posey, L. R., Jr., and E. F. Barker. Infra-red absorption spectrum of mono-deutero-ethane under high resolution—182
Potter, Robert L. Thermodynamic properties of oxygen fluoride and chlorine fluoride from spectroscopic data—957
Pound, G. M. (see LaMer, V. K.)—1337(L)
Povelites, J. J. (see Katcoff, S.)—421
Prasad, Mata, S. S. Dharmatti, and A. K. Ghose. Diamagnetic susceptibilities of mercuric and mercurous ions —819
——, **S. S. Dharmatti, C. R. Kanekar, and N. S. Biradar.** Magnetic study of some hydrates—813
Price, W. C. Infra-red absorption spectra of some metal borohydrides—1044
——, **H. C. Longuet-Higgins, B. Rice, and T. F. Young.** Vibrational spectra of some metal borohydrides—217(L)
—— (see Platt, J. R.)—466
Purcell, E. M. (see Gutowsky, H. S.)—972

Ramsay, D. A. Infra-red spectrum and structure of diazomethane—666(L)
—— (see Bernstein, H. J.)—556
Rank, D. H. and D. W. E. Axford. Infra-red absorption spectra at low temperatures—1339(L)
——, **R. E. Kagarise, and D. W. E. Axford.** Energy differences in liquid dichloro- and dibromoethane rotational isomerism VI—1354(L)
——, **N. Sheppard, and G. J. Szasz.** Raman spectra of polycrystalline hydrocarbons at low temperatures. Rotational isomerism. II—83
—— (see Axford, D. W. E.)—430(L)
Rao, K. Narahari (see Herzberg, G.)—1099
Rector, C. W., G. W. Schaeffer, and J. R. Platt. Substituted borazole spectra: Gain and loss of aromatic character—460
Reed, Charles Albert and William Schriever. Macroscopic space charge in electrolytes during electrolysis—935
Rice, B. (see Price, W. C.)—217(L)
Rieke, C. A. (see Mulliken, R. S.)—1248
—— (see Mulliken, R. S.)—510(L)
Riseman, Jacob and John G. Kirkwood. Rotatory diffusion constants of flexible molecules—442
Rittner, E. S., R. A. Hutner, and F. K. du Pré. Concerning the work of polarization in ionic crystals of the NaCl type. I. Polarization around a single charge in the rigid lattice—198
—— (see Hutner, R. A.)—204
Roberts, A. and Walter F. Edgell. Microwave spectrum of $CF_2=CH_2$—742(L)
Robinson, David Z. Ionic character and the dipole moment of chemical bonds. Calculations of the dipole moment of HCl—1022
Robinson, Lawrence Baylor. Application of a general theory of the formation of liquid films to solutions of lanthanum chloride—960
Rohrback, Gilson H. Calculation of the energy of vaporization of perfluorocylcopentane from intermolecular forces—547
Rollefson, G. K. (see Newton, T. W.)—718
Roothaan, C. C. J. and Robert G. Parr. Calculations of the lower excited levels of benzene—1001(L)
Rosen, Joseph S. Refractive indices and dielectric constants of liquids and gases under pressure—1192
Rowlinson, J. S. Transport properties of non-polar gases —101(L)
Rubinson, William. Equations of radioactive transformation in a neutron flux—542
Rundle, R. E. Electron deficient compounds. II. Relative energies of "half-bonds"—671
Rush, J. H. (see Sponer, H.)—587(L)
Russell, K. E. (see Janz, G. J.)—1352(L)

Schaeffer, G. W. (see Rector, C. W.)—460
Schiff, H. I. (see Phibbs, M. K.)—843(L)
Schneider, W. G. and J. A. H. Duffie. Compressibility of gases at high temperatures. II. Second virial coefficient of helium in the temperature range 0°C to 600°C—751
Schnurmann, Robert (see Maddams, William Francis)—108(L)
Schomaker, Verner (see Guthrie, George, Jr.)—310
Schriever, William (see Reed, Charles Albert)—935
Schulz, L. G. Structure and growth of evaporation LiF and NaCl films on amorphous substrates—1153
Schwartz, J. R. (see Wheland, G. W.)—425(L)
Scott, Arthur F. and Robert Dillon. Reduced temperatures for the liquid state—1179
Scott, Robert L. Thermodynamics of high polymer solutions. IV. Phase equilibria in the ternary system: polymer—liquid 1—liquid 2—268
—— Thermodynamics of high polymer solutions. V. Phase equilibria in the ternary system: polymer 1—polymer 2—solvent—279
Searcy, Alan W. Strength of the hydrogen bond in water—210(L)
Segrè, E. (see Johnson, G. L.)—1
Shaffer, Wave H. (see Herman, Robert C.)—30
Sharkey, A. G., Jr. and R. A. Friedel. Anomalous negative peaks in mass spectra—998(L)
—— (see Friedel, R. A.)—584(L)
Shea, Ruth C. (see Anslow, Gladys A.)—426(L)
Sheldon, Zachary D. (see Dorfman, Leon M.)—511
Sheline, R. K. and J. W. Weigl. Infra-red spectrum of $C^{14}O_2$—747(L)
—— (see Pimentel, George C.)—644
Sheppard, N. Assignment of the vibrational spectra of the C_4 hydrocarbons butyne-1, butene-1, and vinyl acetylene, to the normal modes of vibration of these molecules—74
—— Assignment of the vibrational spectra of ethyl mercaptan and the ethyl halides, and the characterization of an SH deformation frequency—79
—— Interpretation of the vibrational spectra of the C_6 hydrocarbons 22-dimethyl butane, 22-dimethyl-3-butene, and 22-dimethyl-3-butyne—455
—— **and G. J. Szasz.** Spectroscopic studies of rotational isomerism. III. Normal paraffins in the liquid and solid states—86
—— (see Rank, D. H.)—83
—— (see Szasz, G. J.)—93
Shuler, K. E. and K. J. Laidler. Kinetics of heterogeneous atom and radical reactions. I. Recombination of hydrogen atoms on surfaces—1212, 1356(L)
——, **C. A. Dames, and K. J. Laidler.** Kinetics of membrane processes. III. Diffusion of various non-electrolytes through collodion membranes—860
—— (see Laidler, K. J.)—851, 856
Shull, Harrison. Vibrational analysis of the 3400A triplet-singlet emission of benzene—295
Siegel, L. A. Molecular rotation in sodium cyanide and sodium nitrate—1146
Sienko, M. J. (see Leffler, J. E.)—215(L)
Silverman, S. (see Herman, R. C.)—220(L)
Simanouti, Takehiko. Normal vibrations of polyatomic molecules as treated by Urey-Bradley field—245
—— Normal vibrations of polyatomic molecules as calculated by Urey-Bradley field. II. Vibrations of polythene, ethane, and their deuterium compounds—734
—— Normal vibrations of polyatomic molecules as calculated by Urey-Bradley field. III. A table of force constants—848
—— **and San-ichiro Mizushima.** Constant frequency Raman lines of N-paraffins—1102
—— (see Mizushima, San-ichiro)—591, 663(L), 838(L)
Simonson, T. R. (see Olson, A. R.)—348(L), 1167, 1317
Simpson, William T. On the theory of the π-electron system in porphines—1217
Smith, Lincoln G. Infra-red spectrum of C_2H_6—139
Smith, William V. and Robert R. Unterberger. Microwave investigations of chloroform—1348(L)
Smyth, Charles P. (see Oriani, Richard A.)—1174
Spencer, L. V. C. (see Brentano, J. C. M.)—944
Spinks, J. W. T. (see Stow, R. M.)—744(L)
Sponer, H. and J. H. Rush. Near ultraviolet absorption spectra of the isomeric picolines—587(L)
Spotz, E. L. (see Hirschfelder, J. O.)—1343(L)
Stamm, Robert F., Frederick Halverson, and John J. Whalen. Fundamental vibrational frequencies and thermodynamic functions for vinylacetylene, revised thermodynamic functions for hydrogen cyanide, and thermodynamics of two reactions involved in the synthesis of acrylonitrile —104(L)

Stanley, Charles W. and Seymour Katcoff. Properties of 86-second I^{126}—653
Steacie, E. W. R. (see Gunning, H. E.)—351
Steiner, Robert F. (see Doty, Paul)—743(L)
Stent, Gunther S. (see Wall, Frederick T.)—1112
Stevenson, D. P. Effect of temperature on mass spectra—101(L)
—— (see Beeck, O.)—418
—— (see Wagner, C. D.)—419
Stockmayer, W. H. Solubility of heterogeneous polymers—588(L)
—— (see Zimm, Bruno H.)—1301
Stow, R. M. and J. W. T. Spinks. Exchange of ions between the surface of crystals and solutions—744(L)
Strandberg, M. W. P. Rotational absorption spectrum of HDO—901
——, C. S. Pearsall, and M. T. Weiss. On the electric dipole moment and vibrational states of $H_3B^{10}CO$—429(L)
Strickler, H. S. Thermal conductivity of gases and aggregate matter—427(L)
Strobel, H. A. and R. H. Cole. Dielectric behavior of solutions of electrolytes in solvents of low dielectric constant. V. The influence of temperature and concentration on dielectric properties—1141
Stuart, Joseph G. (see Badin, Elmer J.)—314
Sugarman, Nathan. Short-lived halogen fission products—11
Sullivan, John H. (see Davidson, Norman)—176
Sun, C. E., Robert G. Parr, and Bryce L. Crawford, Jr. Detection and determination of redundant vibrational coordinates—840(L)
Sutherland, G. B. B. M. (see Bovey, L. F. H.)—843(L)
Szasz, G. J. and N. Sheppard. Spectroscopic studies of rotational isomerism. IV. 2-Methyl butane and 2,3-dimethyl butane—93
—— (see Rank, D. H.)—83
—— (see Sheppard, N.)—86
Szwarc, M. High frequency factors of "unimolecular" reactions—107(L)
—— Kinetics of the thermal decomposition of propylene—284
—— Kinetics of the thermal decomposition of isobutene—292
—— C—C bond energy in ethylbenzene—431
—— Dissociation energy of the first N—H bond in ammonia—505(L)
—— **and B. N. Ghosh.** Determination of the dissociation energy of the C—Br bond by pyrolysis—744(L)

Taylor, William J. (see Holden, Robert B.)—1356(L)
Telang, M. S. On the mechanism of viscosity of liquids—536
Thode, H. G. (see Lindsay, J. G.)—589(L)
Thomas, Arthur W. (see Carroll, Benjamin)—1336(L)
Thomas, J. H. (see McDowell, C. A.)—588(L)
Thompson, H. W. (see Miller, C. H.)—845(L)
Thornton, V. (see McMurry, H. L.)—918
Tingley, I. I. (see Coffin, C. C.)—502(L)
Tobolsky, Arthur V. (see Dunell, Basil A.)—1001(L)
Tolman, Richard C. Superficial density of matter at a liquid-vapor boundary—118
—— Effect of droplet size on surface tension—333
Tompa, H. Critical point of heterogeneous polymers—1003(L)
—— Critical points of ternary systems with a polymer component—1006(L)
Torkington, P. General solution of the secular equation of second degree, with application to the class A_1 vibrations of the symmetrical triatomic molecule—357
—— Developments in the theory of the secular equation for molecular vibrations—1026
—— Normal coordinate analysis of the planar vibrations of substituted ethylenes—1279
Townes, C. H. and B. P. Dailey. Determination of electronic structure of molecules from nuclear quadrupole effects—782
Trevoy, D. J. and H. G. Drickamer. Viscosity of liquid hydrocarbon mixtures—582(L)
—— **and H. G. Drickamer.** Diffusion in binary liquid hydrocarbon mixtures—1117
—— **and H. G. Drickamer.** Thermal diffusion in binary liquid hydrocarbon mixtures—1120
Tsai, L. S. and M. D. Kamen. On the exchange of cyanide with nitriles—585(L)
Turkevich, J. (see Friedman, L.)—1012
Turnbull, D. and J. C. Fisher. Rate of nucleation in condensed systems—71

Unterberger, Robert R. (see Smith, William V.)—1348(L)

van Dranen, J. and J. A. A. Ketelaar. Theoretical calculation of the parameters α and β used in the molecular orbital method—1338(L)
Van Rysselberghe, Pierre. Electrochemical thermodynamics and kinetics of hydrogen overvoltage—1226
—— (see Zimmerman, Howard K.)—598
Visvanathan, K. S. Decrease of an electrical discharge by external radiation: Joshi-effect—1341(L)
Volman, David H. Vapor-phase photo decomposition of hydrogen peroxide—947

Waddell, J. S. (see Katcoff, S.)—421
Wagner, C. D., O. Beeck, J. W. Otvos, and D. P. Stevenson. Hydrogen exchange reactions of paraffins in the presence of aluminum chloride—alumina catalyst—419
—— (see Beeck, O.)—418
Wagner, E. L. and D. F. Hornig. On rotation in ammonium halides—105(L)
Wall, Frederick T. and Edward H. deButts, Jr. Ionization of polymeric electrolytes—1330
—— **and William R. Krigbaum.** Some properties of van der Waals' liquids—1274
—— **and Gunther S. Stent.** Theory of vapor pressures of liquids on van der Waals' equations of state. II. Binary mixtures—1112
Wall, Leo A. (see Moore, Walter J.)—1327
Wallace, W. E. Born-Mayer model for ionic solids and the heats of formation and lattice spacings of alkali halide solid solutions—1095
Walsh, A. and J. B. Willis. Infra-red absorption spectra at low temperatures—838(L)
Walsh, K. A. (see Katcoff, S.)—421
Walsh, Mac and F. A. Matsen. One-dimensional treatment of the hydrogen molecule ion—1343(L)
Waser, Jürg. Absolute configuration of *d*-tartaric acid—498(L)
Watanabe, Itaru (see Mizushima, San-ichiro)—591, 663(L)
Watanabe, Warren, and F. H. Westheimer. Kinetics of the chromic acid oxidation of isopropyl alcohol: induced oxidation of manganous ion—61
Webb, Allen N., John T. Neu, and Kenneth S. Pitzer. Infra-red and Raman spectra and the thermodynamic properties of diborane—1007
Wechsler, Martin T. (see Hoge, Harold J.)—617
Weigl, John W. and M. Calvin. An istope effect in photosynthesis—210(L)
—— (see Sheline, R. K.)—747(L)
Weiss, M. T. (see Strandberg, M. W. P.)—429(L)
Weissman, S. I. (see Yuster, Philip)—1182
Weller, Sol and R. A. Friedel. Isomer distribution in hydrocarbons from the Fischer-Tropsch process—801
Wells, A. F. (see Garlick, G. F. J.)—399
Wells, Edmund J., Jr. (see Mohler, Fred L.)—1358(L)

West, C. D. Structure—Optical studies. II. Aqueous dispersion of polyvinyl borate—Iodine and its heat of formation —219(L)
Westenberg, A. A., J. H. Goldstein, and E. Bright Wilson, Jr. Microwave spectrum of chloroacetylene and deuterochloroacetylene—1319
Westheimer, F. H. (see Watanabe, Warren)—61
Whalen, John J. (see Stamm, Robert F.)—104(L)
Wheland, G. W., and D. E. Mann. Dipole moments of fulvene and azulene—264
—— **and J. R. Schwartz.** Attempt to find cross products in the benzidine rearrangement—425(L)
White, J. R. Preferentially oil soluble carrier for radiocobalt-60—1000(L)
Whittaker, A. Greenville and Don M. Yost. Magnetic susceptibility, freezing point diagram, density, and spectral absorption of the system vanadium tetrachloride-carbon tetrachloride—188
Wilkins, M. H. F. (see Garlick, G. F. J.)—399
Willard, J. E. (see Miller, A. A.)—168
Williams, Ferd E. (see Johnson, Peter D.)—435, 583(L)
Williams, Nelson T. and Harry Essex. Effect of electric fields on the decomposition of ethane by alpha-rays—995
Williamson, Laura (see Mohler, Fred L.)—1358(L)
Willis, J. B. (see Walsh, A.)—838(L)
Wilson, E. Bright, Jr. (see Westenberg, A. A.)—1320
Wilson, M. Kent and Richard M. Badger. Infra-red spectrum and molecular configuration of hydrogen persulfide —1232
Wilson, J. N. Intrinsic viscosity of linear polymers—217(L)
—— (see Guthrie, George, Jr.)—310
Winston, Harvey and Ralph S. Halford. Motions of molecules in condensed systems: V. Classification of motions and selection rules for spectra according to space symmetry —607
Woltz, Patricia J. H. and E. A. Jones. Infra-red and Raman spectra of carbonyl fluoride—502(L)
Woolley, Harold W. Effect of limiting summation over vibrational levels on calculations of thermodynamic properties—347(L)
Woolf, W. E. (see Lagemann, R. T.)—369
Writz, K. (see Gierer, A.)—745(L)

Yamaguchi, Shigeto (see Mizushima, San-ichiro)—591
Yamasaki, Kazuo, Akira Kotera, Masatoki Yokoi, and Machio Iwasaki. Molecular structure of methylbromosilanes—1355(L)
Yankwich, Peter E. and Melvin Calvin. Effect of isotopic mass on the rate of a reaction involving the carbon-carbon bond—109(L)
Yeager, Ernest and Frank Hovorka. Application of ultrasonics to the study of electrolytic solutions. III. Effect of acoustical waves on the hydrogen electrode—416
——, **John Bugosh, Frank Hovorka, and John McCarthy.** Application of ultrasonic waves to the study of electrolytic solutions. II. Detection of the Debye effect—411
Yokoi, Masatoki (see Yamasaki, Kazuo)—1355(L)
Yomosa, S. (see Nagamiya, T.)—102(L)
Yost, Don M. (see Douglas, David L.)—1345(L)
—— (see Johnston, Harold S.)—386
—— (see Whittaker, A. Greenville)—188
Young, J. A. (see Hamill, William H.)—215(L)
Young, T. F. (see Price, W. C.)—217(L)
Yuster, Philip and S. I. Weissman. Effects of perturbations on phosphorescence: luminescence of metal organic complexes—1182

Zimm, Bruno H. and Walter H. Stockmayer. Dimensions of chain molecules containing branches and rings—1301
Zimmerman, Howard K., Jr. Geometric approach to the theory of the carbon-carbon bond—595
—— **and Pierre Van Rysselberghe.** Directed valance as a property of determinant wave functions—598
Ziomek, Joseph S. and Forrest F. Cleveland. Thermodynamic properties of diiodoacetylene and some symmetrical-top acetylenes—578
——, **Forrest F. Cleveland, and Arnold G. Meister.** Raman and infra-red spectra of oxalyl chloride—669(L)

Analytic Subject Index to Volume 17

References with (L) are to Letters to the Editor

Absorption Spectra
Assignment of the vibrational spectra of the C_4 hydrocarbons butyne-1, butene-1, and vinyl acetylene, to the normal modes of vibration of these molecules, N. Sheppard—74
Assignment of the vibrational spectra of ethyl mercaptan and the ethyl halides, and the characterization of an SH deformation frequency, N. Sheppard—79
Classification of spectra of cata-condensed hydrocarbons, John R. Platt—484
Deslandres-D'Azambuja band system of the C_2 molecule in the ethylene-oxygen flame, George A. Hornbeck and Robert C. Herman—842(L)
Dissociation schemes of N_2, P_2, As_2, Sb_2, and Bi_2, L. Gerö and Catherine Fonó—345(L)
Experimental and theoretical investigation of the skeletal frequencies of the paraffin hydrocarbons and the far infra-red spectrum of carbon tetrachloride, David M. Gates—393
Infra-red evidence for free rotation in the solid state, L. F. H. Bovey and G. B. B. M. Sutherland—843(L)
Interpretation of the vibrational spectra of the C_6 hydrocarbons 22-dimethyl butane, 22-dimethyl-3-butene, and 22-dimethyl-3-butyne, N. Sheppard—455
Magnetic susceptibility, freezing point diagram, density, and spectral absorption of the system vanadium tetrachloride-carbon tetrachloride, A. Greenville Whittaker and Don M. Yost—188
Motions of molecules in condensed systems. V. Classification of motions and selection rules for spectra according to space symmetry, Harvey Winston and Ralph S. Halford—607
Of transuranic salts in crystals, Simon Freed and Fred J. Leitz, Jr.—540
Raman effect, infra-red absorption, dielectric constant, and electron diffraction in relation to internal rotation, San-ichiro Mizushima, Yonezo Morino, Itaru Watanabe, Takehiko Simanouti, and Shigeto Yamaguchi—591
Selection rules for singlet-triplet perturbations in polyatomic molecules, Donald S. McClure—665(L)
Solutions of salts fluid at the temperature of liquid nitrogen spectra of solutions of rare earths, Simon Freed and C. J. Hochanadel—664(L)

Absorption Spectra (continued)
Spectra of disordered crystals, D. F. Hornig—1346(L)
Spectral changes of dyes in colloidal solutions of hydrous oxides, Benjamin Carroll and Arthur W. Thomas—1336(L)
Spectral resemblances in azulene and naphthalene, D. E. Mann, J. R. Platt, and H. B. Klevens—481
Spectral resemblances of cata-condensed hydrocarbons, E. Clar—741(L)
Spectral resemblances of cata-condensed hydrocarbons, H. B. Klevens and J. R. Platt—470, 742(L)
Substituted borazole spectra: Gain and loss of aromatic character, C. W. Rector, G. W. Schaeffer, and John R. Platt—460
Spectroscopic investigation of the carbon monoxide-oxygen reaction, George A. Hornbeck and Helen S. Hopfield—982
Triplet-singlet transitions in organic molecules. Lifetime measurements of the triplet state, Donald S. McClure—905
Vibration-rotation mechanics of the allene molecule. Part I. Classical vibration problem, Robert C. Herman and Wave H. Shaffer—30
Vibrational fine structure in the absorption spectra of uranyl and plutonyl ions in aqueous solution, M. Kasha—349(L)
Vibrational spectra of molecules and complex ions in crystals; II. Benzene, Robert D. Mair and Donald F. Hornig—1236
Vibrational spectrum and infra-red polarization measurements for malononitrile, Frederick Halverson and Rudolph J. Francel—694
Infra-red of
Aluminum hydride ion Raman spectrum, Ellis R. Lippincott—1351(L)
Ammonium nitrate and thallous nitrate, William E. Keller and Ralph S. Halford—26
At low temperature, A. Walsh and J. B. Willis—838(L)
At low temperatures, D. H. Rank and D. W. E. Axford—1339(L)
Borine carbonyl and tetramethyldiborane, R. D. Cowan—218(L)
$C^{14}O_2$, R. K. Sheline and J. W. Weigl—747(L)
Carbon monoxide, G. Herzberg and K. Narahari Rao—1099
Carbon tetrachloride, David M. Gates—393
Carbonyl fluoride, Patricia J. H. Wooltz and E. A. Jones 502(L)
Chlorine trifluoride, E. A. Jones, T. F. Parkinson, and R. B. Murray—501(L)
Cis- and *trans*—$C_2H_2Cl_2$ and $C_2D_2Cl_2$, H. J. Bernstein and D. A. Ramsay—556
Diazomethane, D. A. Ramsay—666(L)
Diborane, Allen N. Webb, John T. Neu, and Kenneth S. Pitzer—1007
Diiodoacetylene, Arnold G. Meister and Forrest F. Cleveland—212(L)
Dimethyl mercury and dimethyl zinc, H. S. Gutowsky—128
Ethane, Lincoln G. Smith—139
HDO, M. W. P. Strandberg—901
Hexachloroethane, S. Mizushima, Y. Morino, T. Simanouti, and K. Kurantani—838(L)
Hydrogen persulfide, M. Kent Wilson and Richard M. Badger—1232
Liquid and solid methane, Robert B. Holden, William J. Taylor, and Herrick L. Johnston—1356(L)
Metal borohydrides, W. C. Price—1044
Metal borohydrides, W. C. Price, H. C. Longuet-Higgins, B. Rice, and T. F. Young—217(L)
Mono-deutero-ethane under high resolution, L. R. Posey, Jr. and E. F. Barker—182
N-butane in the solid state, D. W. E. Axford and D. H. Rank—430(L)
Organic compounds, Earle K. Plyler—218(L)
Oxalyl chloride, Joseph S. Ziomek, Forrest F. Cleveland, and Arnold G. Meister—669(L)
Propane, 1-deuteropropane and 2-deuteropropane and some revisions in the vibrational assignments for propane, H. L. McMurry, V. Thornton, and F. E. Condon—918
Propane-D-1 and propane-D-2, L. Friedman and J. Turkevich—1012
Solid HCN, Robert E. Hoffman and D. F. Hornig—1163(L)
Vinyl acetylene, Robert F. Stamm, Frederick Halverson, and John J. Whalen—104(L)
Microwave of
As a means of investigating structure; I. Rigid crystal lattices, H. S. Gutowsky, G. B. Kistiakowsky, G. E. Pake, and E. M. Purcell—972
As a method of the determination of electronic structure, C. H. Townes and B. P. Dailey—782
$CF_2=CH_2$, A. Roberts and Walter F. Edgell—742(L)
Chloracetylene and deuterochloracetylene, A. A. Westenberg, J. H. Goldstein, and E. Bright Wilson, Jr.—1319
Chloroform, William V. Smith and Robert R. Unterberger—1348(L)
Ultraviolet of
Decaborane, George C. Pimentel and Kenneth S. Pitzer—882
Diazines, Frederick Halverson and Robert C. Hirt—1165(L)
Ethylene oxide, Ta-Kong Liu and A. B. F. Duncan—241
Ethylenes and acetylenes in the vacuum ultraviolet, J. R. Platt, H. B. Klevens, and W. C. Price—466
Fluorinated aromatic hydrocarbons, C. H. Miller and H. W. Thompson—845(L)
Hydrogen-bridged molecules, Gladys A. Anslow, Hsi-Teh Hsieh, and Ruth C. Shea—426(L)
Isomeric picolines, H. Sponer and J. H. Rush—587(L)
Phenanthrene in various solvents, William Francis Maddams and Robert Schnurmann—108(L)
Adsorption (see **Surface Phenomena**)
Apparatus and Methods
Availability of radioantimony-beryllium neutron sources, U. S. Atomic Energy Commission—1003(L)
Carrier-free radioisotopes from cyclotron targets. I. Preparation and isolation of Sn^{113} and In^{114} from cadmium, Roy D. Maxwell, Herman R. Haymond, Donald R. Bomberger, Warren M. Garrison, and Joseph G. Hamilton—1005(L)
Carrier-free radioisotopes from cyclotron targets. II. Preparation and isolation of Cd^{109} from silver, Roy D. Maxwell, Herman R. Haymond, Warren M. Garrison, and Joseph G. Hamilton—1006(L)
Carrier-free radioisotopes from cyclotron targets. III. Preparation and isolation of $Sb^{122, 124}$ from tin, Roy D. Maxwell, Herman R. Haymond, Warren M. Garrison, and Joseph G. Hamilton—1340(L)
Chemical reaction during adiabatic flow through a rocket nozzle, David Altman and S. S. Penner—56
Formulas and numerical tables for overlap integrals, R. S. Mulliken, C. A. Rieke, D. Orloff, and H. Orloff—1248
New method of calculating resonance energies, Ralph G. Pearson—1342(L)
Photoelectric measurements on cool flames, Ludovic Ouellet, Edouard Leger, and Cyrias Ouellet—746(L)
Preferentially oil soluble carrier for radiocobalt-60, J. R. White—1000(L)

Punched card calculation of resonance energies, Margaret B. Oakley and George E. Kimball—706
Rapid electrical method of separating carrier-free radioactivities, Warren M. Garrison, Herman R. Haymond, and Roy D. Maxwell—665(L)
Variational iteration method for solving secular equations, Walter Kohn—670(L)

Catalysis
Catalysis on non-uniform surfaces, G. D. Halsey, Jr.—758
Chemical Reactions (see **Kinetics of Reactions**)
Conductance
Anomalous mobility of H^+ and OH^- ions, A. Gierer and K. Wirtz—**745(L)**
Effect of an electric field on the thermal conductivity of glass, Clifford E. Berry—1355(L)
Physical properties of polonium I. Melting point, electrical resistance, density and allotropy, Charles R. Maxwell —1288
Crystal Structure
Changes in the crystal structure of AgBr when exposed to x-rays, J. C. M. Brentano and L. V. C. Spencer—944
Physical properties of polonium. II. X-ray studies and crystal structure, William H. Beamer and Charles R. Maxwell—1288
Crystalline State
Absorption spectra of transuranic salts in crystals, Simon Freed and Fred J. Leitz, Jr.—540
Born-Mayer model for ionic solids and the heats of formation and lattice spacings of alkali halide solid solutions, W. E. Wallace—1095
Changes in the crystal structure of AgBr when exposed to x-rays, J. C. M. Brentano and L. V. C. Spencer—944
Concerning the work of polarization in ionic crystals of the NaCl type. I. Polarization around a single charge in the rigid lattice. E. S. Rittner, R. A. Hutner, and F. K. du Pré—198
Concerning the work of polarization in ionic crystals of the NaCl type. II. Polarization around two adjacent charges in the rigid lattice, R. A. Hutner, E. S. Rittner, and F. K. du Pré—204
Crystals of luminescent ZnF_2: Mn, Peter D. Johnson and Ferd E. Williams—583(L)
Diffusion of oxygen in potassium chloride, W. S. Koski—582(L)
Infra-red absorption spectrum of *n*-butane in the solid state, D. W. E. Axford and D. H. Rank—430(L)
Infra-red evidence for free rotation in the solid state, L. F. H. Bovey and G. B. B. M. Sutherland—843(L)
Infra-red spectrum of solid hydrogen cyanide, Robert E. Hoffman and D. F. Hornig—1163(L)
Isothermal compositional order-disorder. I. Superstructure solid solutions in a salt system, Alexander Grenall—1036
Kinetic study of the thermoluminescence of lithium fluoride, Charles A. Boyd—1221
Magnetic study of some hydrates, Mata Prasad, S. S. Dharmatti, C. R. Kanekar, and N. S. Birader—813
Molecular rotation in sodium cyanide and sodium nitrate, L. A. Siegel—1146
Motions of molecules in condensed systems. IV. The infrared spectra for ammonium nitrate and thallous nitrate, William E. Keller and Ralph S. Halford—26
Motions of molecules in condensed systems. V. Classification of motions and selection rules for spectra according to space symmetry, Harvey Winston and Ralph S. Halford—607
Note on low frequency dispersion in ionic crystals, T. B. Grimley—496(L)
Note on the selection rules for ions in crystalline surfaces, Marcel W. Nathans—500(L)
On Grüeisen's constant for metals, A. Konya—837(L)
On permanent charges in solid dielectrics. II. Surface charges and transient currents in carnauba wax, B. Gross—866
On rotation in ammonium halides, E. L. Wagner and D. F. Hornig—105(L)
On the photographic reciprocity law failure and related effects. I. The low intensity failure, E. Katz—1132
On the quasi-chemical theory of order, Yin-Yuan Li—1335(L)
Phase transition and the piezoelectric effect of KH_2PO_4, T. Nagamiya and S. Yomosa—102(L)
Physical properties of polonium. I. Melting point, electrical resistance, density, and allotropy, Charles R. Maxwell —1288
Polymorphism and anion rotation disorder in the alkaline earth carbonates, J. J. Lander—892
Quasi-chemical theory of order for the copper gold alloy system, Yin-Yuan Li—447
Raman spectra of polycrystalline hydrocarbons at low temperatures. Rotational isomerism II, D. H. Rank, N. Sheppard, and G. J. Szasz—83
Rate of nucleation in condensed systems, D. Turnbull and J. C. Fisher—71
Rate of nucleation in condensed systems, Errata, J. C. Fisher—429(L)
Spectra of disordered crystals, D. F. Hornig—1346(L)
Spectroscopic studies of rotational isomerism. III. The normal paraffins in the liquid and solid states, N. Sheppard and G. J. Szasz—86
Structural investigations by means of nuclear magnetism. I. Rigid crystal lattices, H. S. Gutowsky, G. B. Kistiakowsky, G. E. Pake, and E. M. Purcell—972
Structure and growth of evaporation LiF and NaCl films on amorphous substrates, L. G. Schulz—1153
Thermodynamics of crystallization in high polymers. VI. Incipient crystallization in stretched vulcanized rubber, Thomas G. Fox, Jr., Paul J. Flory, and Robert E. Marshall—704
Triple-dipole interaction between atoms and cohesion in crystals of the rare gases, B. M. Axilrod—1349(L)
Vibrational spectra of molecules and complex ions in crystals. II. Benzene, Robert D. Mair and Donald F. Hornig —1236
Vibration frequencies and binding forces in some silicate groups, Frank Matossi—679
Zinc sulfide phosphor constitution and its effect on electron traps, G. F. J. Garlick, A. F. Wells, and M. H. F. Wilkins—399

Deuterium (see **Isotopes**)
Dielectrics
Concerning the work of polarization in ionic crystals of the NaCl type. I. Polarization around a single charge in the rigid lattice, E. S. Rittner, R. A. Hutner, and F. K. du Pré—198
Concerning the work of polarization in ionic crystals of the NaCl type. II. Polarization around two adjacent charges in the rigid lattice, R. A. Hutner, E. S. Rittner, and F. K. du Pré—204
Dielectric behavior of solutions of electrolytes in solvents of low dielectric constant. V. The influence of temperature and concentration on dielectric properties, H. A. Strobel and R. H. Cole—1141
Dielectric relaxation of molecules containing rotating polar groups, A. Budo—686
Dipole moment and restricted rotation in some chlorinated hydrocarbons, Richard A. Oriani and Charles P. Smyth —1174

Dielectrics (continued)
Dipole moments of fulvene and azulene, G. W. Wheland and D. E. Mann—264
Effect of an electric field on the thermal conductivity of glass, Clifford E. Berry—1355(L)
Ionic character and the dipole moment of chemical bonds. Calculations of the dipole moment of HCl, David Z. Robinson—1022
Ionization of polymeric electrolytes, Frederick T. Wall and Edward H. deButts, Jr.—1330
Macroscopic space charge in electrolytes during electrolysis, Charles Albert Reed and William Schriever—935
On permanent charges in solid dielectrics. II. Surface charges and transient currents in carnauba wax, B. Gross—866
On the electric dipole moment and vibrational states of $H_3B^{10}CO$, M. W. P. Strandberg, C. S. Pearsall, and M. T. Weiss—429(L)
Osmosis in electrical fields of various frequencies, Z. Laszlo—507(L)
Phase transition and the piezoelectric effect of KH_2PO_4, T. Nagamiya and S. Yomosa—102(L)
Raman effect, infra-red absorption, dielectric constant, and electron diffraction in relation to internal rotation, Sanichiro Mizushima, Yonezo Morino, Itaru Watanabe, Takehiko Simanouti, and Shigeto Yamaguchi—591
Refractive indices and dielectric constants of liquids and gases under pressure, Joseph S. Rosen—1192

Diffusion
Anomalous mobility of H^+ and OH^- ions, A. Gierer and K. Wirtz—745(L)
Burning velocities of butadiene-1,3 with nitrogen-oxygen and helium-oxygen mixtures, Elmer J. Badin, Joseph G. Stuart, and Robert N. Pease—314
Differential diffusion coefficients of sodium ion in sodium chloride solutions, Arthur W. Adamson, James W. Cobble, and Julian M. Nielsen—740(L)
Diffusion in binary liquid hydrocarbon mixtures, D. J. Trevoy and H. G. Drickamer—1117
Diffusion in photo-chemical experiments: The photo-chemical decomposition of acetone, Terrell L. Hill—1125
Diffusion of oxygen in potassium chloride, W. S. Koski—582(L)
Kinetics of membrane processes. I. The mechanism and the kinetic laws for diffusion through membranes, K. J. Laidler and K. E. Shuler—851
Kinetics of membrane processes. II. Theoretical pressure-time relationships for permeable membranes, K. J. Laidler and K. E. Shuler—856
Kinetics of membrane processes. III. The diffusion of various non-electrolytes through collodion membranes, K. E. Shuler, C. A. Dames, and K. J. Laidler—860
Of radioactive copper during oxidation of copper foil, Gilbert W. Castellan and Walter J. Moore—41
Rotatory diffusion constants of flexible molecules, Jacob Riseman and John G. Kirkwood—442
Self-diffusion in argon, Franklin Hutchinson—1081
Theory of the thermal diffusion of electrolytes in a clusius column, George Guthrie, Jr., J. Norton Wilson, and Verner Schomaker—310
Thermal diffusion in binary liquid hydrocarbon mixtures, D. J. Trevoy and H. G. Drickamer—1120

Electrochemistry
Decrease of an electrical discharge by external radiation; Joshi-effect, K. S. Viscanathan—1340(L)
Electrochemical thermodynamics and kinetics of hydrogen overvoltage, Pierre Van Rysselberghe—1226
Macroscopic space charge in electrolytes during electrolysis, Charles Albert Reed and William Schriever—935
Study of metallic electrodes prepared by sublimation, B. C. Bradshaw—344(L)

Electron Diffraction
Estimation of the hindering potential barrier of hexachloroethane by electron diffraction investigation, Yonezo Morino and Machio Iwasaki—216(L)
Internal motion and molecular structure studies by electron diffraction, Isabella Lugoski Karle and Jerome Karle 1052
Molecular structure of methylbromosilanes, Kazuo Yamasaki, Akira Kotera, Masatoki Yokoi, and Machio Iwasaki—1355(L)

Emission Spectra
Formation of electronically excited oxygen in the carbon monoxide flame, K. J. Laidler—221(L)
Hydrocarbon flame spectra, Robert C. Herman and George A. Hornbeck—1343(L)
Photographic infra-red emission bands of O_2 from the Co-O_2 flame, R. C. Herman, H. S. Hopfield, G. A. Hornbeck, and S. Silverman—220(L)
Vibrational analysis of the 3400A triplet-singlet emission of benzene, Harrison Shull—295

Flames
Burning velocities of butadiene-1,3 with nitrogen-oxygen and helium-oxygen mixtures, Elmer J. Badin, Joseph G. Stuart, and Robert N. Pease—314
Cell structure of propane flames burning in tubes, G. H. Markstein—428(L)
Deslandres-D'Azambuja band system of the C_2 molecule in the ethylene-oxygen flame, George A. Hornbeck and Robert C. Herman—842(L)
Formation of electronically excited oxygen in the carbon monoxide flame, K. J. Laidler—221(L)
Hydrocarbon flame spectra, Robert C. Herman and George A. Hornbeck—1343(L)
Measurements of normal burning velocities and flame temperatures of bunsen flames, J. W. Anderson and R. S. Fein—1268
On the theory of burning velocities in gas mixtures, N. Manson—837(L)
Photoelectric measurements on cool flames, Ludovic Ouellet, Edouard Leger, and Cyrias Ouellet—746(L)
Photographic infra-red emission bands of O_2 from the Co-O_2 flame, R. C. Herman, H. S. Hopfield, G. A. Hornbeck, and S. Silverman—220(L)
Spark ignition of gas mixtures, Raymond Friedman and Edward Burke—667(L)
Theory of flame propagation, J. O. Hirschfelder and C. F. Curtiss—1076

Fluorescence
Effects of perturbations on phosphorescence luminescence of metal organic complexes, Philip Yuster and S. I. Weissman—1182
Photomagnetism. Determination of the paramagnetic susceptibility of a dye in its phosphorescent state, G. N. Lewis, M. Calvin, and M. Kasha—804
Triplet-singlet transitions in organic molecules. Lifetime measurements of the triplet state, Donald S. McClure —905
Ultraviolet absorption and luminescence of decaborane, George C. Pimentel and Kenneth S. Pitzer—882

Free Rotation (see **Rotation**)

Heat Capacity (see **Thermodynamic Properties**)

Heat Conductivity
Thermal conductivity of gases and aggregate matter, H. S. Strickler—427(L)

High Pressures
Compressibility of gases at high temperatures. II. The second virial coefficient of helium in the temperature range 0°C to 600°C, W. G. Schneider and J. A. H. Duffie—751
Refractive indices and dielectric constants of liquids and gases under pressure, Joseph S. Rosen—1192
Hindered Rotation (see **Rotation**)
Hydrodynamics
Chemical reaction during adiabatic flow through a rocket nozzle, David Altman and S. S. Penner—56
Near-equilibrium criteria for complex chemical reactions during flow through a nozzle, S. S. Penner—841(L)
New equation for the non-stationary shock-wave, F. Cap —106(L)
Note on transient pressure effect in effusion, R. B. Bernstein—209(L)
Unsteady shock wave, Bruno W. Augenstein—429(L)

Infra-Red Spectra (see **Absorption Spectra**)
Intensities of Spectra
Absorption intensities of ethylenes and acetylenes in the vacuum ultraviolet, J. R. Platt, H. B. Klevens, and W. C. Price—466
Motions of molecules in condensed systems: V. Classification of motions and selection rules for spectra according to space symmetry, Harvey Winston and Ralph S. Halford—607
Ionization Potentials
Comparison of the ionization cross section of H_2 and D_2, Norman Bauer and J. Y. Beach—100(L)
Effect of temperature on mass spectra, David P. Stevenson —101(L)
Hydrocarbon ion appearance potentials, J. J. Mitchell and F. F. Coleman—44
Isotopes
Carbon isotope effect on reaction rates, Kenneth S. Pitzer —1341(L)
C^{13} isotope effect in the decarboxylation of malonic acid, Jacob Bigeleisen and Lewis Friedman—998(L)
Differential diffusion coefficients of sodium ion in sodium chloride solutions, Arthur W. Adamson, James W. Cobble, and Julian M. Nielsen—740(L)
Diffusion of radioactive copper during oxidation of copper foil, Gilbert W. Castellan and Walter J. Moore—41
Effect of isotopic mass on the rate of a reaction involving the carbon-carbon bond, Peter E. Yankwich and Melvin Calvin—109(L)
Efficiency of the internal conversion process in Br^{80}, William H. Hamill and J. A. Young—215(L)
Exchange of Ag^+ ions between aqueous solutions and surfaces of metallic silver, C. C. Coffin and I. I. Tingley— 502(L)
Exchange reaction between bromine and bromotrichloromethane, A. A. Miller and J. E. Willard—168
Exchange reaction between the hydrogen halides and the halogens in the gaseous state, Harold W. Dodgen and W. F. Libby—951
Formula of uranyl ion, Howard W. Crandall—602
Hydrogen exchange reactions of paraffins in the presence of aluminum chloride-alumina catalyst, C. D. Wagner, O. Beeck, J. W. Otvos, and D. P. Stevenson—419
Hydrogen exchange reactions of the butanes in sulfuric acid, O. Beeck, J. W. Otvos, D. P. Stevenson, and C. D. Wagner—418
Infra-red spectrum of $C^{14}O_2$, Raymond K. Sheline and J. W. Weigl—747(L)
Isomer distribution in hydrocarbons from the Fischer-Tropsch process, Sol Weller and R. A. Friedel—801
Isotope effect in photosynthesis, John W. Weigl and M. Calvin—210(L)
Isotope effect in the decarboxylation of labeled malonic acids, Jacob Bigeleisen—425(L)
Isotope effect in the decomposition of oxalic acid, J. G. Lindsay, D. E. McElcheran, and H. G. Thode—589(L)
Isotope effect in the rupture of carbon-carbon bonds in propane-1-C^{13}, Jacob Bigeleisen—344(L)
Kinetics of the vapor phase exchange of radioactive bromine between trichlorobromomethane and bromine, Norman Davidson and John H. Sullivan—176
Mass spectrometric study of a mixture of deuterated acetaldehydes, Robert K. Brinton and Francis E. Blacet—797
Mass spectrum of hydrogen deutride (HD), R. A. Friedel and A. G. Sharkey, Jr.—584(L)
Relative reaction velocities of isotopic molecules, Jacob Bigeleisen—675
Short-lived halogen fission products, Nathan Sugarman —11
Theory of the thermal diffusion of electrolytes in a Clusius column, George Guthrie, Jr., Norton Wilson, and Verner Schomaker—310
Thermal diffusion in binary liquid hydrocarbon mixtures, D. J. Trevoy and H. G. Drickamer—1120
Thermodynamic functions for tritium deuteride. The dissociation of tritium deuteride. Equilibria among the isotopic hydrogen molecules, W. M. Jones—1062
Viscosity of deuterium oxide and water from 5° to 125° C, R. C. Hardy and R. L. Cottington—509(L)

Kinetics of Reactions
Attempt to find cross products in the benzidine rearrangement, G. W. Wheland and J. R. Schwartz—425(L)
Carbon isotope effect on reaction rates, Kenneth S. Pitzer —1341(L)
C^{13} isotope effect in the decarboxylation of malonic acid, Jacob Bigeleisen and Lewis Friedman—998(L)
Chemical reaction during adiabatic flow through a rocket nozzle, David Altman and S. S. Penner—56
Comparison of the ionization cross section of H_2 and D_2, Norman Bauer and J. Y. Beach—100(L)
Condensation coefficient and adsorption, Hans M. Cassel —1000(L)
Correlation between viscosity and energy of vaporization, E. Brunner—346(L)
Decomposition of benzoyl peroxide in a magnetic field, J. E. Leffler—741(L)
Decrease of an electrical discharge by external radiation, R. Parshad and S. Karim—667(L)
Determination of the dissociation energy of the C—Br bond by pyrolysis, M. Szwarc and B. N. Ghosh—744(L)
Diffusion in photo-chemical experiments: The photochemical decomposition of acetone, Terrell L. Hill—1125
Effect of isotopic mass on the rate of a reaction involving the carbon-carbon bond, Peter E. Yankwich and Melvin Calvin—109(L)
Electrochemical thermodynamics and kinetics of hydrogen overvoltage, Pierre Van Rysselberghe—1226
Equations of radioactive transformation in a neutron flux, William Rubinson—542
Exchange of Ag^+ ions between aqueous solutions and surfaces of metallic silver, C. C. Coffin and I. I. Tingley 502(L)
Exchange reaction between bromine and bromotrichloromethane, A. A. Miller and J. E. Willard—168
Exchange reaction between the hydrogen halides and the halogens in the gaseous state, Harold W. Dodgen and W. F. Libby—951
Formation of electronically excited oxygen in the carbon monoxide flame, K. J. Laidler—221(L)
General kinetics of copolymerization and an extension of the viscosity method to determine velocity constants, C. H. Bamford and M. J. S. Dewar—1188

Kinetics of Reactions (continued)
High frequency factors of "unimolecular" reactions, M. Szwarc—107(L)
Hydrogen exchange reactions of the butanes in sulfuric acid, O. Beeck, J. W. Otvos, D. P. Stevenson, and C. D. Wagner—418
Hydrogen exchange reactions of paraffins in the presence of aluminum chloride-alumina catalyst, C. D. Wagner, O. Beeck, J. W. Otvos, and D. P. Stevenson—419
Hydrogen peroxide in the thermal hydrogen oxygen reaction. I. Thermal decomposition of hydrogen peroxide, C. K. McLane—379
Isomer distribution in hydrocarbons from the Fischer-Tropsch process, Sol Weller and R. A. Friedel—801
Isotope effect in the decarboxylation of labeled malonic acids, Jacob Bigeleisen—425(L)
Isotope effect in the decomposition of oxalic acid, J. G. Lindsay, D. E. McElcheran, and H. G. Thode—589(L)
Isotope effect in the rupture of carbon-carbon bonds in propane-1-C^{13}, Jacob Bigeleisen—344(L)
Kinetic mechanism for ion-exchange, Arthur W. Adamson and Jack J. Grossman—1002(L)
Kinetics of heterogeneous atom and radical reactions. I. The recombination of hydrogen atoms on surface, K. E. Shuler and K. J. Laidler—1212
Kinetics of membrane processes. I. The mechanism and the kinetic laws for diffusion through membranes, K. J. Laidler and K. E. Shuler—851
Kinetics of membrane processes. II. Theoretical pressure-time relationships for permeable membranes, K. J. Laidler and K. E. Shuler—856
Kinetics of membrane processes. III. The diffusion of various non-electrolytes through collodion membranes, K. E. Shuler, C. A. Dames, and K. J. Laidler—860
Kinetics of the chromic acid oxidation of isopropyl alcohol: The induced oxidation of manganous ion, Warren Watanabe and F. H. Westheimer—61
Kinetics of the pyrolysis of allyl bromide, Allan Maccoll —1350(L)
Kinetics of the rapid gas reaction between ozone and nitrogen dioxide, Harold S. Johnston and Don M. Yost —386
Kinetics of the thermal decomposition of isobutene, M. Szwarc—292
Kinetics of the thermal decomposition of propylene, M. Szwarc—284
Kinetics of the vapor phase exchange of radioactive bromine between trichlorobromomethane and bromine, Norman Davidson and John H. Sullivan—176
Kinetic study of the thermoluminescence of lithium fluoride, Charles A. Boyd—1221
Mass spectra of *cis*- and *trans*-decahydronaphthalene, Fred L. Mohler, Laura Williamson, Edmund J. Wells, Jr., and Helen M. Dean—1358(L)
Mass spectrometer studies of thermal decomposition products from hydrocarbons, Norman D. Coggeshall and Nathan F. Kerr—1016
Measurements of normal burning velocities and flame temperatures of Bunsen flames, J. W. Anderson and R. S. Fein—1268
Mechanism of oxidation of ferrous sulfate, F. H. Krenz and H. A. Dewhurst—1337(L)
Mechanism of the initiation of the oxidation of acetaldehyde in the gas phase, C. A. McDowell and J. H. Thomas—588(L)
Mechanism of the photo-chemical decomposition of diethyl ketone, Leon M. Dorfman and Zachary D. Sheldon—511
Near-equilibrium criteria for complex chemical reactions during flow through a nozzle, S. S. Penner—841(L)
Note on temperature and the recombination coefficient, N. C. Gerson—1351(L)
On the exchange of cyanide with nitriles, L. S. Tsai and M. D. Kamen—585(L)
On the non-equilibrium theory of absolute reaction rates, Hugh M. Hulburt and Joseph O. Hirschfelder—964
On the theory of burning velocities in gas mixtures, N. Manson—837(L)
Photo-chemical reduction of water by europium (II) ion, and the magnetic susceptibilities of europium (II) and (III) ions, Da.vid L. Douglas and Don M. Yost—1345 (L)
Photographic infra-red emission bands of O_2 from the Co-O_2 flame, R. C. Herman, H. S. Hopfield, G. A. Hornbeck, and S. Silverman—220(L)
Quantum mechanics of chemical kinetics of homogeneous gas phase reactions. I. General considerations, Sidney Golden—620
Quantum mechanics of chemical kinetics of homogeneous gas phase reactions. II. Approximations for displacement reaction between an atom and a diatomic molecule, S. Golden and A. M. Peiser—630
Quantum mechanics of chemical kinetics of homogeneous gas phase reactions. II. Approximations for displacement reaction between an atom and a diatomic molecule, Erratum, S. Golden and A. M. Peiser—842(L)
Rate of nucleation in condensed systems, D. Turnbull and J. C. Fisher—71
Rate of nucleation in condensed systems, Errata, J. C. Fisher—429(L)
Rates of ionic reactions in aqueous solutions, A. R. Olson and T. R. Simonson—1167
Reaction mechanism in ionic systems, Bal Krishna—846(L)
Relative reaction velocities of isotopic molecules, Jacob Bigeleisen—675
Role of hydrogen peroxide in the thermal combination of hydrogen and oxygen, R. B. Holt and O. Oldenberg—1091
Sodium (^2P) photo-sensitized decomposition of ethane, G. L. Lee and D. J. LeRoy—1349(L)
Spark ignition of gas mixtures, Raymond Friedman and Edward Burke—667(L)
Spectroscopic investigation of the carbon-monoxide oxygen reaction, George A. Hornbeck and Helen S. Hopfield—982
Styrene polymerization in a magnetic field, J. E. Leffler and M. J. Sienko—215(L)
Theory of flame propagation, J. O. Hirschfelder and C. F. Curtiss—1076
Thermodynamic properties of activated complexes, E. Brunner—346(L)
Vapor-phase photo-decomposition of hydrogen peroxide, David H. Volman—947
Mercury Photosensitized Reactions
Mercury photosensitized hydrogenation of the butenes and the photolysis of di-*n*-butylmercury, Walter J. Moore and Leo A. Wall—1325
Polymerization of cyclopropane, H. E. Gunning and E. W. R. Steacie—351

Large Molecules (see **Polymers**)
Light Scattering
Effect of non-homogeneity of molecular weight on the scattering of light by high polymer solutions, H. C. Brinkman and J. J. Hermans—574
Light scattering from solutions of charged macromolecules, Paul Doty and Robert F. Steiner—743(L)
Scattering of light by sodium silicate solutions, P. Debye and R. V. Nauman—664(L)

Note on steric factors for some reactions involving free radicals, Terrell L. Hill—503(L)
Structure—Optical studies. II. Aqueous dispersion of polyvinyl borate—Iodine and its heat of formation, C. D. West—219(L)

Liquids

Anomalous mobility of H^+ and OH^- ions, A. Gierer and K. Wirtz—745(L)
On the mechanism of viscosity of liquids, M. S. Telang—536
Physical adsorption and the free volume model for liquids, Terrell L. Hill—590(L)
Reduced temperatures for the liquid state, Arthur F. Scott and Robert Dillon—1179
Solubility of water in hydrocarbons, J. H. Hildebrand—1346(L)
Some properties of van der Waals' liquids, Frederick T. Wall and William R. Krigbaum—1274
Spectroscopic studies of rotational isomerism. III. The normal paraffins in the liquid and solid states, N. Sheppard and G. J. Szasz—86
Strength of the hydrogen bond in water, Alan W. Searcy—210(L)
Structure—Optical studies. II. Aqueous dispersion of polyvinyl borate—Iodine and its heat of formation, C. D. West—219(L)
Temperature variation of ultrasonic velocity in liquids, R. T. Lagemann, D. R. McMillan, Jr., and W. E. Woolf—369
Tensile strengths of liquids. I. Thermodynamic considerations, Sidney W. Benson and Edward Gerjuoy—914
Theory of vapor pressures of liquids based on van der Waals' equation of state. II. Binary mixtures, Frederick T. Wall and Gunther S. Stent—1112
Thermodynamics of high polymer solutions. IV. Phase equilibria in the ternary system: Polymer—liquid 1—liquid 2, Robert L. Scott—268
Thermodynamics of high polymer solutions. V. Phase equilibria in the ternary system: Polymer 1—polymer 2—solvent, Robert L. Scott—279
Ultrasonic velocities of sound in some liquid metals, O. J. Kleppa—668(L)
Ultraviolet absorption by hydrogen-bridged molecules, Gladys A. Anslow, Hsi-Teh Hsieh, and Ruth C. Shea—426(L)
Vapor pressure, orthobaric liquid density and critical constants of isobutane, James A. Beattie, David G. Edwards, and Stanley Marple, Jr.—576
"Vapor snakes" in cyclohexane, M. K. Phibbs and H. I. Schiff—843(L)
Viscosity of deuterium oxide and water from 5° to 125° C, R. C. Hardy and R. L. Cottington—509(L)

Magnetic Susceptibilities

Decomposition of benzoyl peroxide in a magnetic field, J. E. Leffler—741(L)
Diamagnetic anisotropy of *p*-polyphenyls, R. McWeeny—1341(L)
Diamagnetic susceptibilities of mercuric and mercurous ions, Mata Prasad, S. S. Dharmatti, and A. K. Ghose—819
Magnetic study of some hydrates, Mata Prasad, S. S. Dharmatti, C. R. Kanekar, and N. S. Biradar—813
Magnetic susceptibility, freezing point diagram, density and spectral absorption of the system vanadium tetrachloride-carbon tetrachloride, A. Greenville Whittaker and Don M. Yost—188
Magnetic susceptibility of organic compounds, S. Broersma—873
Photo-chemical reduction of water by europium (II) ion, and the magnetic susceptibilities of europium (II) and (III) ions, David L. Douglas and Don M. Yost—1345(L)
Photomagnetism. Determination of the paramagnetic susceptibility of a dye in its phosphorescent state, G. N. Lewis, M. Calvin, and M. Kasha—804
Some magnetic properties of manganese-activated luminescent solids, Peter D. Johnson and Ferd E. Williams—435
Styrene polymerization in a magnetic field, J. E. Leffler and M. J. Sienko—215(L)

Mass Spectra

Anomalous negative peaks in mass spectra, A. G. Sharkey, Jr. and R. A. Friedel—998(L)
Comparison of the ionization cross section of H_2 and D_2, Norman Bauer and J. Y. Beach—100(L)
Effect of temperature on mass spectra, David P. Stevenson—101(L)
Hydrocarbon ion appearance potentials, J. J. Mitchell and F. F. Coleman—44
Mass spectra of *cis*- and *trans*-decahydronaphthalene, Fred L. Mohler, Laura Williamson, Edmund J. Wells, Jr., and Helen M. Dean—1358(L)
Mass spectrometer studies of thermal decomposition products from hydrocarbons, Norman D. Coggeshall and Nathan F. Kerr—1016
Mass spectrometric study of a mixture of deuterated acetaldehydes, Robert K. Brinton and Francis E. Blacet—797
Mass spectrum of hydrogen deutride (HD), R. A. Friedel and A. G. Sharkey, Jr.—584(L)
Temperature coefficients for the mass spectra of a number of hydrocarbons, Clifford E. Berry—1164(L)

Mechanics, Classical

Assignment of the vibrational spectra of ethyl mercaptan and the ethyl halides, and the characterization of an SH deformation frequency, N. Sheppard—79
Assignment of the vibrational spectra of the C_4 hydrocarbons butyne-1, butene-1, and vinyl acetylene to the normal modes of vibration of these molecules, N. Sheppard—74
Complete sets and redundancies among small vibrational coordinates, J. C. Decius—1315
Developments in the theory of the secular equation for molecular vibrations, P. Torkington—1026
Experimental and theoretical investigation of the skeletal frequencies of the paraffin hydrocarbons and the far-infra-red spectrum of carbon tetrachloride, David M. Gates—393
Further interpretation of interaction terms in the potential function of polyatomic molecules, Jules Duchesne and André Monfils—586(L)
General method of obtaining molecular symmetry coordinates, J. Rud Nielsen and L. H. Berryman—659
General solution of the secular equation of second degree, with application to the Class A_1 vibrations of the symmetrical triatomic molecule, P. Torkington—357
Internal rotation. I. A product rule for *cis*- and *trans*-isomers, H. J. Bernstein—256
Normal coordinate analysis of the planar vibrations of substituted ethylenes, P. Torkington—1279
Normal vibrations of polyatomic molecules as treated by Urey-Bradley field, Takehiko Simanouti—245
Normal vibrations of polyatomic molecules as calculated by Urey-Bradley field. II. Vibrations of polythene, ethane, and their deuterium compounds, Takehiko Simanouti—734
Normal vibrations of polyatomic molecules as calculated by Urey-Bradley field. III. A table of force constants, Takehiko Simanouti—848

Mechanics, Classical (continued)
Note on the product rule for rotational isomers, Sanichiro Mizushima, Yonezo Morino, and Takehiko Simanouti—663(L)
On the detection and determination of redundant vibrational coordinates, C. E. Sun, Robert G. Parr, and Bryce L. Crawford, Jr.—840(L)
Planar vibration of benzene, Bryce L. Crawford, Jr. and Foil A. Miller—249
Symmetry species of overtones of degenerate vibrational fundamentals, J. C. Decius—504(L)
Variational iteration method for solving secular equations, Walter Kohn—670(L)
Vibration frequencies and binding forces in some silicate groups, Frank Matossi—679
Vibration-rotation mechanics of the allene molecule. Part I. Classical vibration problem, Robert C. Herman and Wave H. Shaffer—30

Mechanics, Quantum
Asymmetric rotor. VII. Extension of the calculation of energy levels, R. M. Hainer, Paul C. Cross, and Gilbert W. King—826
Asymptotic expression for the energy levels of the asymmetric rotor. II. Centrifugal distortion correction, Erratum, S. Golden—586(L)
Asymptotic expression for the energy levels of the asymmetric rotor. III. Approximation for the essentially degenerate levels of the rigid rotor S. Golden and J. K. Bragg—439
Bipyramidal pentacovalent bond orbitals, George H. Duffey—196
Calculation of ionic resonance energies, Ralph G. Pearson—969
Calculation of the energy of vaporization of perfluorocyclopentane from intermolecular forces, Gilson H. Rohrback—547
Calculations of the lower excited levels of benzene, C. C. J. Roothaan and Robert G. Parr—1001(L)
Comparison of relations between covalent bond order, energy, and interatomic distance for carbon-carbon bonds, J. L. Kavanau—738
Determination of electronic structure of molecules from nuclear quadrupole effects, C. H. Townes and B. P. Dailey—782
Dipole moments of fulvene and azulene, G. W. Wheland and D. E. Mann—264
Directed valence as a property of determinant wave functions, Howard K. Zimmerman, Jr. and Pierre Van Rysselberghe—598
Electron deficient compounds. II. Relative energies of "half-bonds," R. E. Rundle—671
Electronic state of the methylene radical, K. J. Laidler and E. J. Casey—213(L)
Electrostatic theory of the potential barriers hindering rotation around single bonds, Edwin N. Lassettre and Laurence B. Dean, Jr.—317
Energy levels and thermodynamic functions for molecules with internal rotation. III. Compound rotation, John E. Kilpatrick and Kenneth S. Pitzer—1064
Energy levels of aromatic hydrocarbons, D. P. Craig—1358(L)
Fermi gas model applied to the thermal electromotive forces of tin, lead, and indium, George C. Pimentel and Raymond K. Sheline—644
Formulas and numerical tables for overlap integrals, R. S. Mulliken, C. A. Rieke, D. Orloff, and H. Orloff—1248
Further interpretation of interaction terms in the potential function of polyatomic molecules, Jules Duchesne and André Monfils—586(L)
Geometric approach to the theory of the carbon-carbon bond, Howard K. Zimmerman, Jr.—595
Hexacovalent bond orbitals. I, George H. Duffey—1328
Ionic character and the dipole moment of chemical bonds. Calculations of the dipole moment of HCl, David Z. Robinson—1022
Metastability of the lowest excited singlet level of naphthalene, M. Kasha and R. V. Nauman—516
Molecular orbital calculations of vibrational force constants. II. The ring-twisting constants of benzene, Bryce L. Crawford, Jr. and Robert G. Parr—726
New method of calculating resonance energies, Ralph G. Pearson—1342(L)
One-dimensional treatment of the hydrogen molecule ion, Mac Walsh and F. A. Matsen—1342(L)
On the theory of the π-electron system in porphines, William T. Simpson—1217
Overlap integrals and chemical binding, R. S. Mulliken, C. A. Rieke, D. Orloff, and H. Orloff—510(L)
Potential energy in conjugated polyenes and the effective nuclear charge of the carbon atom, Noel S. Bayliss—1353(L)
Punched card calculation of resonance energies, Margaret B. Oakley and George E. Kimball—706
Quantum-mechanical theory of light absorption of organic dyes and similar compounds, Hans Kuhn—1198
Quantum mechanics of chemical kinetics of homogeneous gas phase reactions. I. General considerations, Sidney Golden—620
Quantum mechanics of chemical kinetics of homogeneous gas phase reactions. II. Approximations for displacement reaction between an atom and a diatomic molecule, S. Golden and A. M. Peiser—630
Quantum mechanics of chemical kinetics of homogeneous gas phase reactions. II. Approximations for displacement reactions between an atom and a diatomic molecule, S. Golden and A. M. Peiser—842(L)
Repulsive interaction potentials at small interaction distances: He—He and H—H_2 systems, I. Amdur—844(L)
Selection rules for singlet-triplet perturbations in polyatomic molecules, Donald S. McClure—665(L)
Theoretical calculation of the parameters α and β used in the molecular orbital method, J. van Dranen and J. A. A. Ketelaar—1338(L)
Triple-dipole interaction between atoms and cohesion in crystals of the rare gases, B. M. Axilrod—1349(L)
Vibration frequencies and binding forces in some silicate groups, Frank Matossi—679

Mechanics, Statistical
Calculation of the energy of vaporization of perfluorocyclopentane from intermolecular forces, Gilson H. Rohrback—547
Calculation of transport properties of gases, I. Amdur—100(L)
Dimensions of chain molecules containing branches and rings, Bruno H. Zimm and Walter H. Stockmayer—1301
Effect of limiting summation over vibrational levels on calculations of thermodynamic properties, Harold W. Wooley—347(L)
Extension of Fowler's treatment of surface tension to physical adsorption, Terrell L. Hill—668(L)
Isothermal compositional order-disorder. I. Superstructure solid solutions in a salt system, Alexander Grenall—1036
Note on the coefficient of the term $\Pi\beta_k^{nk}$ in the cluster integral b_l in Mayer's condensation theory, Tzu-Ching Huang—348(L)
On the non-equilibrium theory of absolute reaction rates, Hugh M. Hulburt and Joseph O. Hirschfelder—964
On the quasi-chemical theory of order, Yin-Yuan Li—1335(L)

Physical adsorption and the free volume model for liquids, Terrell L. Hill—590(L)
Quasi-chemical theory of order for the copper gold alloy system, Yin-Yuan Li—447
Statistical-mechanical theory of surface tension, John G. Kirkwood and Frank P. Buff—338
Statistical-mechanical theory of transport processes. III. The coefficients of shear and bulk viscosity of liquids, John G. Kirkwood, Frank P. Buff, and Melvin S. Green —988
Statistical mechanics of adsorption. V. Thermodynamics and heat of adsorption, Terrell L. Hill—520
Statistical mechanics of adsorption. VI. Localized unimolecular adsorption on a heterogeneous surface, Terrell L. Hill—762
Statistical mechanics of adsorption. VII. Thermodynamic functions for the B.E.T. theory, Terrell L. Hill—772
Statistical mechanics of adsorption. VIII. The statistical analog of the B.E.T. constant a_1b_2/b_1a_2 for simulated benzene and hydrogen iodide molecules on graphite, J. W. Drenan and Terrell L. Hill—775
Statistical mechanics of dilute polymer solutions, Paul J. Flory—1347(L)
Transport properties of non-polar gases, J. S. Rowlinson —101(L)
Transverse boundary of the random coil, C. A. Hollingsworth—97

Metals
Electron deficient compounds. II. Relative energies of "Hall-bonds," R. E. Rundle—671
Fermi gas model applied to the thermal electromotive forces of tin, lead, and indium, George C. Pimentel and Raymond K. Sheline—644
Isothermal compositional order-disorder. I. Superstructure solid solutions in a salt system, Alexander Grenall—1036
On Grüeisen's constant for metals, A. Kónya—837(L)
Study of metallic electrodes prepared by sublimation, B. C. Bradshaw—344(L)
Ultrasonic velocities of sound in some liquid metals, O. J. Kleppa—668(L)

Microwave (see **Absorption Spectra**)

Molecular Films (see **Surface Phenomena**)

Molecular Spectra (see **Absorption Spectra and Fluorescence**)

Molecular Structure and Constants
Absolute configuration of *d*-tartaric acid, Jürg Waser—498(L)
Bipyramidal pentacovalent bond orbitals, George H. Duffey —196
Bond energies and bond distances of branched paraffins, George Glockler—748(L)
Bond energies and bond distances of the normal paraffins, George Glockler—747(L)
C—C bond energy in ethylbenzene, M. Szwarc—431
Calculations of the lower excited levels of benzene, C. C. J. Roothaan and Robert G. Parr—1001(L)
Comparison of relations between covalent bond order, energy, and interatomic distance for carbon-carbon bonds, J. L. Kavanau—738
Determination of electronic structure of molecules from nuclear quadrupole effects, C. H. Townes and B. P. Dailey—782
Determination of the dissociation energy of the C—Br bond by pyrolysis, M. Szwarc and B. N. Ghosh—744(L)
Dipole moments of fulvene and azulene, G. W. Wheland and D. E. Mann—264
Dissociation energies of carbon-hydrogen bonds in paraffins from bond energies, George Glockler—749(L)
Dissociation energy of the first N—H bond in ammonia. M. Szwarc—505(L)
Dissociation schemes of N_2, P_2, As_2, Sb_2, and Bi_2, L. Gerö and Catherine Fonó—345(L)
Effect of electric fields on the decomposition of ethane by alpha-rays, Nelson T. Williams and Harry Essex—995
Electronic state of the methylene radical, K. J. Laidler and E. J. Casey—213(L)
Energy difference between the rotational isomers of 1,2-dichloroethane, San-ichiro Mizushima, Yonezo Morino, Itaru Watanabe, and Takehiko Simanouti—663(L)
Energy levels and thermodynamic functions for molecules with internal rotation. III. Compound rotation, John E. Kilpatrick and Kenneth S. Pitzer—1064
Energy levels of aromatic hydrocarbons, D. P. Craig—1358(L)
Energy of dissociation $H_2O \rightarrow H + OH$, O. Oldenberg—1059
Entropy and configuration of methylhydrazine, G. J. Janz and K. E. Russell—1352(L)
Estimation of the hindering potential barrier of hexachloroethane by electron diffraction investigation, Yonezo Morino and Machio Iwasaki—216(L)
Experimental and theoretical investigation of the skeletal frequencies of the paraffin hydrocarbons and the far infra-red spectrum of carbon tetrachloride, David M. Gates—393
Formula of uranyl ion, Howard W. Crandall—602
Fundamental vibrational frequencies and thermodynamic functions for vinylacetylene; revised thermodynamic functions for hydrogen cyanide; and thermodynamics of two reactions involved in the synthesis of acrylonitrile, Robert F. Stamm, Frederick Halverson, and John J. Whalen—104(L)
Further interpretation of interaction terms in the potential function of polyatomic molecules, Jules Duchesne and André Monfils—586(L)
Heats of combustion of polythene and polyisobutylene, George S. Parks and John R. Mosley—691
Heats of dissociation of carbon-hydrogen bonds in methane and its radicals, K. J. Laidler and E. J. Casey—1087
Infra-red spectrum and molecular configuration of hydrogen persulfide, M. Kent Wilson and Richard M. Badger —1232
Infra-red spectrum and structure of diazomethane, D. A. Ramsay—666(L)
Internal motion and molecular structure studies by electron diffraction, Isabella Lugoski Karle and Jerome Karle—1052
Internal rotation. I. A product rule for *cis*- and *trans*-isomers, H. J. Bernstein—256
Internal rotation. II. The energy difference between the rotational isomers of 1,2-dichloroethane, H. J. Bernstein —258
Internal rotation. III. The potential barrier in 1,2-dichloroethane, H. J. Bernstein—262
Internal rotation. IV. The optical activity and isomerization energy of the rotational isomers of D-secondary butyl alcohol, H. J. Bernstein and E. Egelund Pedersen —885
Interpretation of the vibrational spectra of the C_6 hydrocarbons 22-dimethyl butane, 22-dimethyl-3-butene, and 22-dimethyl-3-butyne, N. Sheppard—455
Ionic character and the dipole moment of chemical bonds. Calculations of the dipole moment of HCl, David Z. Robinson—1022
Metastability of the lowest excited singlet level of naphthalene, M. Kasha and R. V. Nauman—516
Methylene radical, George H. Duffey—840(L)
Molecular orbital calculations of vibrational force constants. II. The ring-twisting constants of benzene, Bryce L. Crawford, Jr. and Robert G. Parr—726

Molecular Spectra and Constants (continued)
Molecular structure of methylbromosilanes, Kazuo Yamasaki, Akira Kotera, Masatoki Yokoi, and Machio Iwasaki—1355(L)
Normal vibrations of polyatomic molecules as calculated by Urey-Bradley field. II. Vibrations of polythene, ethane, and their deuterium compounds, Takehiko Simanouti—734
Normal vibrations of polyatomic molecules as calculated by Urey-Bradley field. III. A table of force constants, Takehiko Simanouti—848
Normal vibrations of polyatomic molecules as treated by Urey-Bradley field, Takehiko Simanouti—245
On the electric dipole moment and vibrational states of $H_3B^{10}CO$, M. W. P. Strandberg, C. S. Pearsall, and M. T. Weiss—429(L)
On the theory of the π-electron system in porphines, William T. Simpson—1217
Photomagnetism. Determination of the paramagnetic susceptibility of a dye in its phosphorescent state, G. N. Lewis, M. Calvin, and M. Kasha—804
Planar vibration of benzene, Bryce L. Crawford, Jr. and Foil A. Miller—249
Potential energy in conjugated polyenes and the effective nuclear charge of the carbon atom, Noel S. Bayliss—1353(L)
Punched card calculation of resonance energies, Margaret B. Oakley and George E. Kimball—706
Relative rates of photo-chlorination of $CHCl_3$ and $CDCl_3$, T. W. Newton and G. K. Rollefson—718
Repulsive interaction potentials at small separation distances: He—He and H—H_2 systems, I. Amdur—844(L)
Simple potential functions and the hydrogen halide molecules, Mansel Davies—374
Solubility of heterogeneous polymers, W. H. Stockmayer—588(L)
Spectral resemblances of cata-condensed hydrocarbons, E. Clar—741(L)
Spectral resemblances of cata-condensed hydrocarbons, H. B. Klevens and J. R. Platt—742(L)
Structure of ethylene oxide, G. L. Cunningham, A. W. Boyd, William D. Gwinn, and W. I. LeVan—211(L)
Strength of the hydrogen bond in water, Alan W. Searcy—210(L)
Substituted borazole spectra: Gain and loss of aromatic character, C. W. Rector, G. W. Schaeffer, and J. R. Platt—460
Thermodynamic functions of CH_3SH and $(CH_3)_2S$, John L. Binder—499(L)
Thermodynamic properties of oxygen fluoride and chlorine fluoride from spectroscopic data, Robert L. Potter—957
Vibrational analysis of the 3400A triplet-singlet emission of benzene, Harrison Shull—295
Vibrational frequencies of $CF_2=CH_2$, Walter F. Edgell and Willis E. Byrd—740(L)
Vibrational spectra and structure of the aluminum hydride ion, Ellis R. Lippincott—1351(L)
Vibrational spectra of some metal borohydrides, W. C. Price, H. C. Longuet-Higgins, B. Rice, and T. F. Young—217(L)
Vibrational spectrum of diiodoacetylene, Arnold G. Meister and Forrest F. Cleveland—212(L)
Vibration frequencies and binding forces in some silicate groups, Frank Matossi—679
Vibration potential function and structure of NH_3 and AsH_3 molecules, Jules Duchesne and Ivan Ottelet—1354(L)

Optical Activity
Internal rotation. IV. The optical activity and isomerization energy of the rotational isomers of D-secondary butyl alcohol, H. J. Bernstein and E. Egelund Pedersen—885

Phase Transitions
Critical point of heterogeneous polymers, H. Tompa—1003(L)
Critical points of ternary systems with a polymer component, H. Tompa—1006(L)
Phase transition and the piezoelectric effect of KH_2PO_4, T. Nagamiya and S. Yomosa—102(L)
Rate of nucleation in condensed systems, D. Turnbull and J. C. Fisher—71
Surface tension of small droplets from Volmer and Flood's nucleation data, V. K. LaMer and G. M. Pound—1337(L)

Phosphors
Crystals of luminescent ZnF_2: Mn, Peter D. Johnson and Ferd E. Williams—583(L)
Some magnetic properties of manganese-activated luminescent solids, Peter D. Johnson and Ferd E. Williams—435
Zinc sulfide phosphor constitution and its effect on electron traps, G. F. J. Garlick, A. F. Wells, and M. H. F. Wilkins—399

Photochemistry
Changes in the crystal structure of AgBr when exposed to x-rays, J. C. M. Brentano and L. V. C. Spencer—944
Decrease of an electrical discharge by external radiation, R. Parshad and S. Karim—667(L)
Decrease of an electrical discharge by external radiation: Joshi-effect, K. S. Visvanathan—1340(L)
Diffusion in photo-chemical experiment: The photo-chemical decomposition of acetone, Terrell L. Hill—1125
Mechanism of the photo-chemical decomposition of diethyl ketone, Leon M. Dorfman and Zachary D. Sheldon—511
Mercury photosensitized hydrogenation of the butenes and the photolysis of di-*n*-butylmercury, Walter J. Moore and Leo A. Wall—1325
Mercury photosensitized polymerization of cyclopropane, H. E. Gunning and E. W. R. Steacie—351
On the photographic reciprocity law failure and related effects. I. The low intensity failure, E. Katz—1132
Photo-chemical reduction of water by europium (II) ion, and the magnetic susceptibilities of europium (II) and (III) ions, David L. Douglas and Don M. Yost—1345(L)
Photo-chlorination of methyl chloroformate in carbon tetrachloride solution, T. L. Batke, L. M. Dorfman, and D. J. LeRoy—566
Photomagnetism. Determination of the paramagnetic susceptibility of a dye in its phosphorescent state, G. N. Lewis, M. Calvin, and M. Kasha—804
Sodium (^2P) photosensitized decomposition of ethane, G. L. Lee and D. J. LeRoy—1349(L)
Vapor-phase photo-decomposition of hydrogen peroxide, David H. Volman—947
Viscoelastic and photoelastic properties of polystyrene above its softening temperature, Lawrence E. Nielsen and Rolf Buchdahl—839(L)

Polymers
Configuration of real polymer chains, Paul J. Flory—303
Contribution to the thermodynamics of high polymer solutions. V. Solubility of heterogeneous polymers, G. Gavoret and Michel Magat—999(L)
Critical point of heterogeneous polymers, H. Tompa—1003(L)
Critical points of ternary systems with a polymer component, H. Tompa—1006(L)

Dimensions of chain molecules containing branches and rings, Bruno H. Zimm and Walter H. Stockmayer—1301
Dynamic properties of polymeric materials, Basil A. Dunell and Arthur V. Tobolsky—1001(L)
Effect of non-homogeneity of molecular weight on the scattering of light by high polymer solutions, H. C. Brinkman and J. J. Hermans—574
General kinetics of copolymerization and an extension of the viscosity method to determine velocity constants, C. H. Bamford and M. J. S. Dewar—1188
Intrinsic viscosity of linear polymers, J. N. Wilson—217(L)
Ionization of polymeric electrolytes, Frederick T. Wall and Edward H. deButts, Jr.—1330
Light scattering from solutions of charged macromolecules, Paul Doty and Robert F. Steiner—743(L)
Micelles in non-aqueous media, R. W. Mattoon and M. B. Mathews—496(L)
Rotatory diffusion constants of flexible molecules, Jacob Riseman and John G. Kirkwood—442
Solubility of heterogeneous polymers, W. H. Stockmayer—588(L)
Solubilization in swollen micelles, H. B. Klevens—1004(L)
Statistical mechanics of dilute polymer solutions, Paul J. Flory—1347(L)
Structure—Optical studies. II. Aqueous dispersion of polyvinyl borate—Iodine and its heat of formation, C. D. West—219(L)
Styrene polymerization in a magnetic field, J. E. Leffler and M. J. Sienko—215(L)
Thermodynamics of crystallization in high polymers. IV. A theory of crystalline states and fusion in polymers, copolymers, and their mixtures with diluents, Paul J. Flory—223
Thermodynamics of high polymer solutions. IV. Phase equilibria in the ternary system: Polymer—liquid 1—liquid 2, Robert L. Scott—268
Thermodynamics of high polymer solutions. V. Phase equilibria in the ternary system: Polymer 1—Polymer 2—Solvent, Robert L. Scott—279
Thermodynamics of crystallization in high polymers. VI. Incipient crystallization in stretched vulcanized rubber, Thomas G. Fox, Jr., Paul J. Flory, and Robert E. Marshall—704
Thermodynamic studies of polyvinyl acetate solutions in the dilute and moderately concentrated range, George V. Browning and John D. Ferry—1107
Transverse boundary of the random coil, C. A. Hollingsworth—97
Viscoelastic and photoelastic properties of polystyrene above its softening temperature, Lawrence E. Nielsen and Rolf Buchdahl—839(L)

Quantum Mechanics (see **Mechanics, Quantum**)

Radio Chemistry
Availability of radioantimony-beryllium neutron sources, U. S. Atomic Energy Commission—1003(L)
Carrier-free radioisotopes from cyclotron targets. I. Preparation and isolation of Sn^{113} and In^{114} from cadmium, Roy D. Maxwell, Herman R. Haymond, Donald R. Bomberger, Warren M. Garrison, and Joseph G. Hamilton—1005(L)
Carrier-free radioisotopes from cyclotron targets. II. Preparation and isolation of Cd^{109} from silver, Roy D. Maxwell, Herman R. Haymond, Warren M. Garrison, and Joseph G. Hamilton—1006(L)
Carrier-free radioisotopes from cyclotron targets. III. Preparation and isolation of $Sb^{122, 124}$ from tin, Roy D. Maxwell, Herman R. Haymond, Warren M. Garrison, and Joseph G. Hamilton—1340(L)
Carrier-free radioisotopes from cyclotron targets. IV. Preparation and isolation of Mn^{54} and $Co^{56, 57, 58}$, Roy D. Maxwell, Jeanne D. Gile, Warren M. Garrison, and Joseph G. Hamilton—1340(L)
Characteristics of 16.5-minute Y^{94}, Leon J. Brown and Seymour Katcoff—497(L)
Chemical oxidation states of Cl and N formed by the $S^{34}(p,n)Cl^{34}$ and $O^{16}(p,\alpha)N^{13}$ reactions in crystals, Dale J. Meier and Clifford S. Garner—1344(L)
Chemical properties of astatine I, G. L. Johnson, R. F. Leininger, and E. Segrè—1
Difference in the recoil energy of the Br^{80} isomers following neutron capture, Paul P. Capron, Edgard Crevecoeur, and Maurice Faes—349(L)
Effect of electric fields on the decomposition of ethane by alpha-rays, Nelson T. Williams and Harry Essex—995
Efficiency of the internal conversion process in Br^{80}, William H. Hamill and J. A. Young—215(L)
Equations of radioactive transformation in a neutron flux, William Rubinson—542
Hot atom chemistry of the propyl bromides, Lewis Friedman and W. F. Libby—647
Neutron absorption cross sections of radioactive La^{140} and two stable cerium isotopes, S. Katcoff, J. A. Leary, K. A. Walsh, R. A. Elmer, S. S. Goldsmith, L. D. Hall, E. G. Newbury, J. J. Povelites, and J. S. Waddell—421
Physical properties of polonium. I. Melting point, electrical resistance, density and allotropy, Charles R. Maxwell—1288
Physical properties of polonium. II. X-ray studies and crystal structure, William H. Beamer and Charles R. Maxwell—1293
Physical properties of polonium. III. Half-life of polonium, William H. Beamer and William E. Easton—1296
Preferentially oil soluble carrier for radiocobalt-60, J. R. White—1000(L)
Properties of 86-second $I^{(126)}$, Charles W. Stanley and Seymour Katcoff—653
Rapid electrical method of separating carrier-free radioactivities, Warren M. Garrison, Herman R. Haymond, and Roy D. Maxwell—665(L)
Search for short-lived Y, Zr, and Cb fission products, Seymour Katcoff and Leon J. Brown—505(L)
Short-lived halogen fission products, Nathan Sugarman—11

Raman Spectra
Constant frequency Raman lines of N-paraffin, Takehiko Simanouti and San-ichiro Mizushima—1102
Of carbonyl fluoride, Patricia J. H. Wooltz and E. A. Jones—502(L)
Of chlorine trifluoride, E. A. Jones, T. F. Parkinson, and R. B. Murray—501(L)
Of diborane, Allen N. Webb, John T. Neu, and Kenneth S. Pitzer—1007
Of dimethyl mercury and dimethyl zinc, H. S. Gutowsky—128
Of hexachloroethane, S. Mizushima, Y. Morino, T. Simanouti, and K. Kuratani—838(L)
Of oxalyl chloride, Joseph S. Ziomek, Forrest F. Cleveland, and Arnold G. Meister—669(L)
Of tetraethyl orthosilicate and trimethyl silicon chloride, Erratum, Jules Duchesne, A. Monfilo, and Claude Anspach—110(L)

Raman Spectra (continued)
Raman effect, infra-red absorption, dielectric constant and electron diffraction in relation to internal rotation, Sanichiro Mizushima, Yonezo Morino, Itaru Watanabe, Takehiko Simanouti, and Shigeto Yamaguchi—591
Raman spectra of certain phosphoric acids and their salts, T. J. Hanwick and P. Hoffmann—1166(L)
Raman spectra of polycrystalline hydrocarbons at low temperatures. Rotational isomerism II, D. H. Rank, N. Sheppard, and G. J. Szasz—83
Spectroscopic studies of rotational isomerism. III. The normal paraffins in the liquid and solid states, N. Sheppard and G. J. Szasz—86
Spectroscopic studies of rotational isomerism. IV. 2-methyl butane and 2,3-dimethyl butane, G. J. Szasz and N. Sheppard—93
Vibrational frequencies of $CF_2=CH_2$, Walter F. Edgell and Willis E. Byrd—740(L)
Vibrational spectra and structure of the aluminum hydride ion, Ellis R. Lippincott—1351(L)
Reaction Rates (see **Kinetics of Reaction**)
Refractive Indices
Refractive indices and dielectric constants of liquids and gases under pressure, Joseph S. Rosen—1192
Rotation
Asymmetric rotor. VII. Extension of the calculation of energy levels, R. M. Hainer, Paul C. Cross, and Gilbert W. King—826
Dielectric relaxation of molecules containing rotating polar groups, A. Budo—686
Dipole moment and restricted rotation in some chlorinated hydrocarbons, Richard A. Oriani and Charles P. Smyth—1174
Electrostatic theory of the potential barriers hindering rotation around single bonds, Edwin N. Lassettre and Laurence B. Dean, Jr.—317
Estimation of the hindering potential barrier of hexacloroethane by electron diffraction investigation, Yonezo Morino and Machio Iwasaki—216(L)
Hindered rotation in ethyl alcohol, J. O. Halford—111
Infra-red evidence for free rotation in the solid state, L. F. H. Bovey and G. B. B. M. Sutherland—843(L)
Internal rotation. I. A product rule for *cis-* and *trans-*isomers, H. J. Bernstein—256
Internal rotation. II. The energy difference between the rotational isomers of 1,2-dichloroethane, H. J. Bernstein—258
Internal rotation. III. The potential barrier in 1,2-dichloroethane, H. J. Bernstein—262
Internal rotation. IV. The optical activity and isomerization energy of the rotational isomers of D-secondary butyl alcohol, H. J. Bernstein and E. Egelund Pedersen—885
Molecular rotation in sodium cyanide and sodium nitrate, L. A. Siegel—1146
On rotation in ammonium halides, E. L. Wagner and D. F. Hornig—105(L)
Polymorphism and anion rotational disorder in the alkaline earth carbonates, J. J. Lander—892
Raman effect, infra-red absorption, dielectric constant and electron diffraction in relation to internal rotation, Sanichiro Mizushima, Yonezo Morino, Itaru Watanabe, Takehiko Simanouti, and Shigeto Yamaguchi—591
Rotational Isomerism
Energy differences in liquid dichloro and dibromoethane rotational isomerism VI, D. H. Rank, R. E. Kagarise, and D. W. E. Axford—1354(L)
Raman spectra of polycrystalline hydrocarbons at low temperatures. Rotational isomerism II, D. H. Rank, N. Sheppard, and G. J. Szasz—83
Spectroscopic studies of rotational isomerism. III. The normal paraffins in the liquid and solid states, N. Sheppard and G. J. Szasz—86
Spectroscopic studies of rotational isomerism. IV. 2-methyl butane and 2,3-dimethyl butane, G. J. Szasz and N. Sheppard—93

Solutions (see also **Liquids**)
Anomalous mobility of H^+ and OH^- ions, A. Gierer and K. Wirtz—745(L)
Application of a general theory of the formation of liquid films to solutions of lanthanum chloride, Lawrence Baylor Robinson—960
Application of ultrasonic waves to the study of electrolytic solutions. II. The detection of the Debye effect, Ernest Yeager, John Bugosh, Frank Hovorka, and John McCarthy—411
Application of ultrasonics to the study of electrolytic solutions. III. The effect of acoustical waves on the hydrogen electrode, Ernest Yeager and Frank Hovorka—416
Born-Mayer model for ionic solids and the heats of formation and lattice spacings of alkali halide solid solutions, W. E. Wallace—1095
Contribution to the thermodynamics of high polymer solutions. V. Solubility of heterogeneous polymers, G. Gavoret and Michel Magat—999(L)
Critical point of heterogeneous polymers, H. Tompa—1003(L)
Critical points of ternary systems with a polymer component, H. Tompa—1006(L)
Differential diffusion coefficients of sodium ion in sodium chloride solutions, Arthur W. Adamson, James W. Cobble, and Julian M. Nielsen—740(L)
Exchange of ions between the surface of crystals and solutions, R. M. Stow and J. W. T. Spinks—744(L)
Hydrolysis of ferric ion, A. R. Olson and T. R. Simonson—1317
Ionization of polymeric electrolytes, Frederick T. Wall and Edward H. deButts, Jr.—1330
Isothermal compositional order-disorder. I. Super-structure solid solutions in a salt system, Alexander Grenall—1036
Macroscopic space charge in electrolytes during electrolysis, Charles Albert Reed and William Schriever—935
Rates of ionic reactions in aqueous solutions, A. R. Olson and T. R. Simonson—1167
Reaction mechanism in ionic systems, Bal Krishna—846(L)
Salt effects on ionic equilibria, A. R. Olson and T. R. Simonson—348(L)
Solubility of heterogeneous polymers, W. H. Stockmayer—588(L)
Solubility of water in hydrocarbons, J. H. Hildebrand—1346(L)
Solutions of salts fluid at the temperature of liquid nitrogen spectra of solutions of rare earths, Simon Freed and C. J. Hochanadel—664(L)
Spectral changes of dyes in colloidal solutions of hydrous oxides, Benjamin Carroll and Arthur W. Thomas—1336(L)
Statistical mechanics of dilute polymer solutions, Paul J. Flory—1347(L)
Thermodynamic studies of polyvinyl acetate solutions in the dilute and moderately concentrated range, George V. Browning and John D. Ferry—1107
Spectra (see **Absorption Spectra, Fluorescence, Raman Spectra**)
Statistical Mechanics (see **Mechanics, Statistical**)
Surface Phenomena
Application of a general theory of the formation of liquid films to solutions of lanthanum chloride, Lawrence Baylor Robinson—960

Catalysis on non-uniform surfaces, G. D. Halsey, Jr.—758
Condensation coefficient and adsorption, Hans M. Cassel —1000(L)
Effect of droplet size on surface tension, Richard C. Tolman—333
Evaporation of polar hydrocarbon monolayers, J. Karle —500(L)
Exchange of ions between the surface of crystals and solutions, R. M. Stow and J. W. T. Spinks—744(L)
Extension of Fowler's treatment of surface tension to physical adsorption, Terrell L. Hill—668(L)
Kinetics of heterogeneous atom and radical reactions. I. The recombination of hydrogen atoms on surface, K. E. Shuler and K. J. Laidler—1356
Micelles in non-aqueous media, R. W. Mattoon and M. B. Mathews—496(L)
New method of estimating the surface area of powder, Masataka Mizushima—1357(L)
Note on the selection rules for ions in crystalline surfaces, Marcel W. Nathans—500(L)
On the catalyst surface structure, Shou-Chu Liang—1348 (L)
Physical adsorption and the free volume model for liquids, Terrell L. Hill—590(L)
Physical adsorption on non-uniform surfaces, Terrell L. Hill—106(L)
Simplified technique for surface area determined by adsorption of nitrogen, W. V. Loebenstein and V. R. Deitz —1004(L)
Solubilization in swollen micelles, H. B. Klevens—1004(L)
Spectral changes of dyes in colloidal solutions of hydrous oxides, Benjamin Carroll and Arthur W. Thomas—1336(L)
Statistical-mechanical theory of surface tension, John G. Kirkwood and Frank P. Buff—338
Statistical mechanics of adsorption. V. Thermodynamics and heat of adsorption, Terrell L. Hill—520
Statistical mechanics of adsorption. VI. Localized unimolecular adsorption on a heterogeneous surface, Terrell L. Hill—762
Statistical mechanics of adsorption. VII. Thermodynamic functions for the B.E.T. theory, Terrell L. Hill—772
Statistical mechanics of adsorption. VIII. The statistical analog of the B.E.T. constant a_1b_2/b_1a_2 for simulated benzene and hydrogen iodide molecules on graphite, J. W. Drenan and Terrell L. Hill—775
Structure and growth of evaporation LiF and NaCl films on amorphous substrates, L. G. Schulz—1153
Superficial density of matter at a liquid-vapor boundary, Richard C. Tolman—118
Surface tension of small droplets from Volmer and Flood's nucleation data, V. K. LaMer and G. M. Pound—1337 (L)
Thermodynamic properties of the surface of magnesium oxide, George Jura—1335(L)
Thermodynamic transition from adsorption to solution, Terrell L. Hill—507(L)
"Vapor snakes" in cyclohexane, M. K. Phibbs and H. I. Schiff—843(L)

Thermal Diffusion

Effect of pressure on the thermal diffusion ratio, H. G. Drickamer and J. R. Hofto—1165(L)
In hydrogen-hydrocarbon mixtures, H. G. Drickamer, S. L. Downey, and N. C. Pierce—408
Theory of the thermal diffusion of electrolytes in a Clusius column, George Guthrie, Jr., J. Norton Wilson, and Verner Schomaker—310
Thermal diffusion in binary liquid hydrocarbon mixtures, D. J. Trevoy and H. G. Drickamer—1120

Thermodynamic Properties

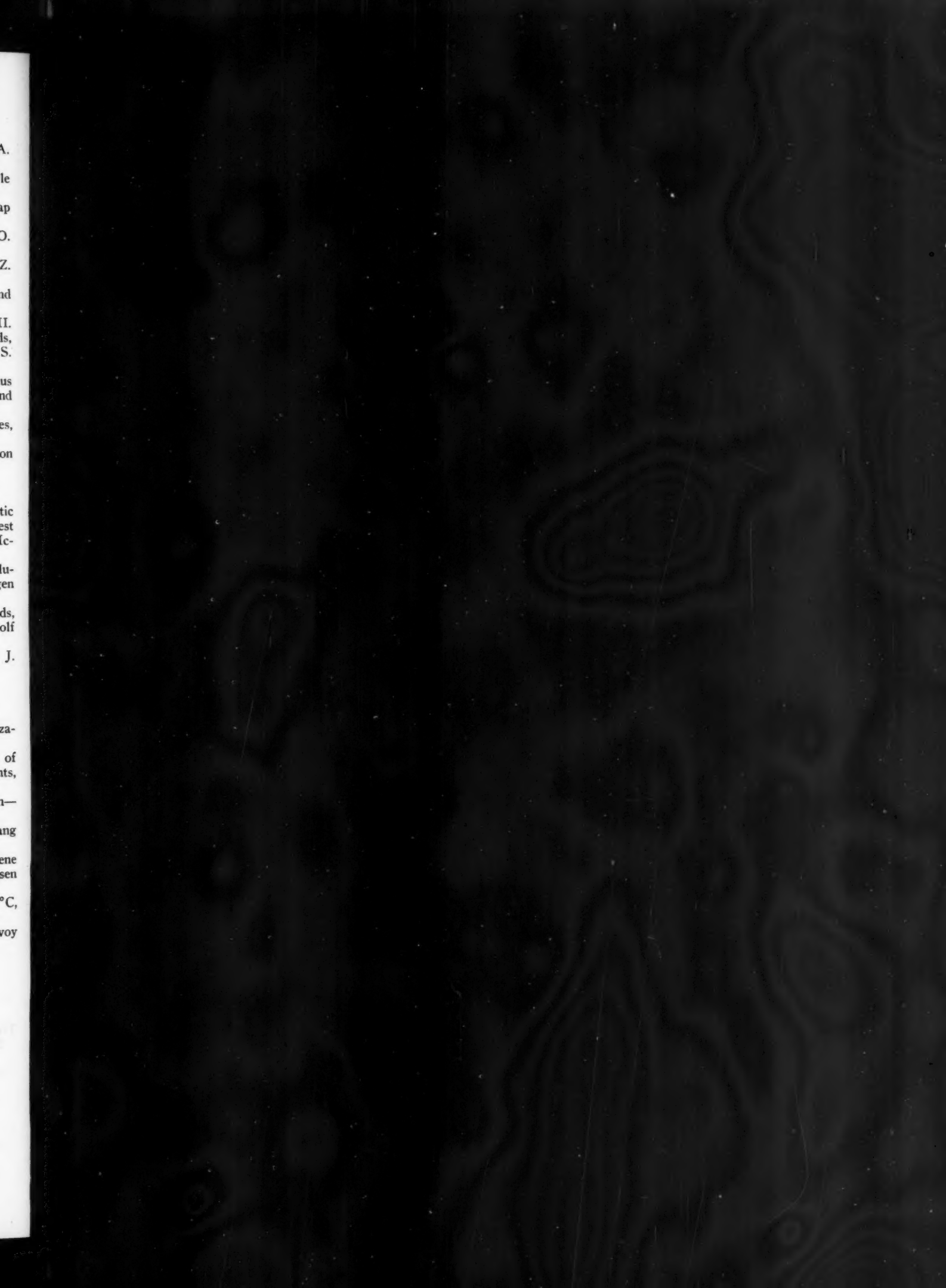
Calculation of the energy of vaporization of perfluorocyclopentane from intermolecular forces, Gilson H. Rohrback—547
Chemical properties of astatine I, G. L. Johnson, R. F. Leininger, and E. Segrè—1
Condensation coefficient and adsorption, Hans M. Cassel —1000(L)
Contribution of the deviation from perfect gas behavior to the entropy and heat capacity. Water and benzene, J. O. Halford—405
Consistency of the thermodynamic data for water substance vapor phase to 550°C. Part VII, Frederick G. Keyes—923
Contribution to the thermodynamics of high polymer solutions. V. Solubility of heterogeneous polymers, G. Gavoret and Michel Magat—999(L)
Correlation between viscosity and energy of vaporization, E. Brunner—346(L)
Determination of the density of UF_6 from the sinking temperatures of glass floats, Harold J. Hoge and Martin W. Wechsler—617
Energy difference between the rotational isomers of 1,2-dichloroethane, San-ichiro Mizushima, Yonezo Morino, Itaru Watanabe, and Takehiko Simanouti—663(L)
Energy levels and thermodynamic functions for molecules with internal rotation. III. Compound rotation, John E. Kilpatrick and Kenneth S. Pitzer—1064
Energy of dissociation $H_2O \rightarrow H + OH$, O. Oldenberg—1059
Entropy and configuration of methylhydrazine, G. J. Janz and K. E. Russell—1352(L)
Fundamental vibrational frequencies and thermodynamic functions for vinylacetylene; revised thermodynamic functions for hydrogen cyanide; and thermodynamics of two reactions involved in the synthesis of acrylonitrile, Robert F. Stamm, Frederick Halverson, and John J. Whalen—104(L)
Heats of combustion of polythene and polyisobutylene, George S. Parks and John R. Mosley—691
Heats of dissociation of carbon-hydrogen bonds in methane and its radicals, K. J. Laidler and E. J. Casey—1087
Heats of vaporization of uranium hexafluoride, Joseph F. Masi—755
Hydrolysis of ferric ion, A. R. Olson and T. R. Simonson —1167
Infra-red and Raman spectra and the thermodynamic properties of diborane, Allen N. Webb, John T. Neu, and Kenneth S. Pitzer—1007
Magnetic susceptibility, freezing point diagram, density and spectral absorption of the system vanadium tetrachloride-carbon tetrachloride, A. Greenville Whittaker and Don M. Yost—188
Methylene radical, George H. Duffey—840(L)
Of activated complexes, E. Brunner—346(L)
On the catalyst surface structure, Shou-Chu Liang—1348 (L)
Physical properties of polonium. I. Melting point, electrical resistance, density and allotropy, Charles R. Maxwell—1288
Reduced temperatures for the liquid state, Arthur F. Scott and Robert Dillon—1179
Relative rates of photo-chlorination of $CHCl_3$ and $CDCl_3$, T. W. Newton and G. K. Rollefson—718
Salt effects on ionic equilibria, A. R. Olson and T. R. Simonson—348(L)
Solubility of water in hydrocarbons, J. H. Hildebrand—1346(L)

Thermodynamic Properties (continued)
Thermodynamic functions for tritium deuteride. The dissociation of tritium deuteride. Equilibria among the isotopic hydrogen molecules, W. M. Jones—1062
Thermodynamic functions of CH_3SH and $(CH_3)_2S$, John L. Binder—499(L)
Thermodynamic properties of diiodoacetylene and some symmetrical-top acetylenes, Joseph S. Ziomek and Forrest F. Cleveland—578
Thermodynamic properties of oxygen fluoride and chlorine fluoride from spectroscopic data, Robert L. Potter—957
Thermodynamic properties of the surface of magnesium oxide, George Jura—1335(L)
Thermodynamic studies of polyvinyl acetate solutions in the dilute and moderately concentrated range, George V. Browning and John D. Ferry—1107
Triple-dipole interaction between atoms and cohesion in crystals of the rare gases, B. M. Axilrod—1349(L)
Vapor pressure and other thermodynamic data for *n*-hexadecane and *n*-dodecylcyclohexane near room temperature, George S. Parks and George E. Moore—1151
Vapor pressure, orthobaric liquid density and critical constants of isobutane, James A. Beattie, David G. Edwards, and Stanley Marple, Jr.—576

Thermodynamics
Reduced temperatures for the liquid state, Arthur F. Scott and Robert Dillon—1179
Some properties of van der Waals' liquids, Frederick T. Wall and William R. Krigbaum—1274
Superficial density of matter at a liquid-vapor boundary, Richard C. Tolman—118
Tensile strengths of liquids. I. Thermodynamic considerations, Sidney W. Benson and Edward Gerjuoy—914
Theory of vapor pressures of liquids based on van der Waals' equation of state. II. Binary mixtures, Frederick T. Wall and Gunther S. Stent—1112
Thermodynamics of crystallization in high polymers. IV. A theory of crystalline states and fusion in polymers, copolymers and their mixtures with diluents, Paul J. Flory—223
Thermodynamics of high polymer solutions. IV. Phase equilibria in the ternary system: Polymer—liquid 1—liquid 2, Robert L. Scott—268
Thermodynamics of high polymer solutions. V. Phase equilibria in the ternary system: Polymer 1—Polymer 2—Solvent, Robert L. Scott—279
Thermodynamic transition from adsorption to solution, Terrell L. Hill—507(L)

Transport Phenomena
Calculation of transport properties of gases, I. Amdur—100(L)
Condensation coefficient and adsorption, Hans M. Cassel—1000(L)
Decrease of an electrical discharge by external radiation, R. Parshad and S. Karim—667(L)
Dynamic properties of polymeric materials, Basil A. Dunell and Arthur V. Tobolsky—1001(L)
Evaporation of polar hydrocarbon monolayers, J. Karle—500(L)
New equation for the non-stationary shock-wave, F. Cap—106(L)
Note on the transport properties for non-polar gases, J. O. Hirschfelder, R. B. Bird, and E. L. Spotz—1343(L)
Osmosis in electrical fields of various frequencies, Z. Laszlo—507(L)
Spark ignition of gas mixtures, Raymond Friedman and Edward Burke—667(L)
Statistical-mechanical theory of transport processes. III. The coefficients of shear and bulk viscosity of liquids, John G. Kirkwood, Frank P. Buff, and Melvin S. Green—988
Theory of the thermal diffusion of electrolytes in a Clusius column, George Guthrie, Jr., J. Norton Wilson, and Verner Schomaker—310
Transport properties of multicomponent gas mixtures, Charles F. Curtiss and Joseph O. Hirschfelder—550
Transport properties of non-polar gases, J. S. Rowlinson—101(L)

Ultrasonics
Application of ultrasonic waves to the study of electrolytic solutions. II. The detection of the Debye effect, Ernest Yeager, John Bugosh, Frank Hovorka, and John McCarthy—411
Application of ultrasonics to the study of electrolytic solutions. III. The effect of acoustical waves on the hydrogen electrode, Ernest Yeager and Frank Hovorka—416
Temperature variation of ultrasonic velocity in liquids, R. T. Lagemann, D. R. McMillan, Jr., and W. E. Woolf—369
Ultrasonic velocities of sound in some liquid metals, O. J. Kleppa—668(L)

Valence (see **Mechanics, Quantum**)

Viscosity
Correlation between viscosity and energy of vaporization, E. Brunner—346(L)
General kinetics of copolymerization and an extension of the viscosity method to determine velocity constants, C. H. Bamford and M. J. S. Dewar—1188
Intrinsic viscosity of linear polymers, J. N. Wilson—217(L)
On the mechanism of viscosity of liquids, M. S. Telang—536
Viscoelastic and photoelastic properties of polystyrene above its softening temperature, Lawrence E. Nielsen and Rolf Buchdahl—839(L)
Viscosity of deuterium oxide and water from 5° to 125°C, R. C. Hardy and R. L. Cottington—509(L)
Viscosity of liquid hydrocarbon mixtures, D. J. Trevoy and H. G. Drickamer—582(L)